THE INDUSTRY'S RECOGNIZED AUTHORITY

ROCK PRODUCTS

LARGEST PRODUCER CIRCULATION IN THE HISTORY OF THE FIELD

Kaiser Boosting Gypsum Capacity 80 Percent page 55
Alpha's "Engineering Aids" Promote Goodwill page 60
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New Blasting Pattern Cuts Down-Time page 92



Kaiser Gypsum's expanded Long Beach, Calif., plant

SEPTEMBER 1956

These Crushers Give Double Service!



Williams Heavy Duty Reversible Hammer Mill for top output of crushed stone, clay, shale and all other heavy abrasive materials.

WILLIAMS *Reversible* HAMMER MILLS

Double service from hammers, breaker plates and grate bars—maintenance reduced to half or less—downtime cut as much as 50%—these are only a few of the money-making, time-saving features of Williams Reversible Hammer Mills.

Operation either clockwise or counter-clockwise with a reversible motor promises that hammers and other internal parts will work twice as long without even opening the machine. Slower and more even wear results in continuous peak output of a uniformly high quality product while, at the same time, demanding the very minimum of time and expense in the replacement of worn parts.

Reversible manganese breaker plates also give twice the usual length of service, and are adjustable to compensate for hammer wear to maintain original close settings.

For the most in real operating economy, high production and top quality products, get the facts about Williams Reversible Hammer Mills. *Write For Catalog.*



Open view of Reversible Hammer Mill. Note heavy shock-proof, wear-resistant manganese steel liners and breaker plates, and the rugged, reinforced construction. Entire interior easily, quickly accessible. Rotor removable without disturbing feeder or feed chute.

WILLIAMS PATENT CRUSHER & PULVERIZER CO.
800 St. Louis Ave. St. Louis 6, Mo.

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CRUSHERS GRINDERS SHREDDERS



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PRE-BILT

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Order from nearest of 9 plants—reduce costs and delays

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Inclines like this pose no special problems for highly-adaptable Link-Belt PRE-BILT sectional belt conveyors.



Conveyor with 30-in. wide belt handles iron ore concentrate and tailings from washing plant to loading hoppers.



Book 2579 outlines Link-Belt PRE-BILT sectional belt conveyor advantages. Write for your copy today.

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FROM SELECTION TO OPERATION...AS SIMPLE AS THIS

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QUICK DELIVERY. PRE-BILT conveyors are built at nine strategic locations and are shipped from the plant nearest you.

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CAT* attachments fill the bill every time. They increase operator comfort and convenience—which means increased efficiency. You get *more work* out of your machine.

See your Caterpillar Dealer's Parts Representative for information and catalogs on the complete line of Cat original attachments for your machines.

Caterpillar Tractor Co., Peoria, Illinois, U. S. A.



Cat all-weather steel cabs are tailored to fit exactly your Caterpillar-built Tractor and Motor Grader. Simple to install, yet they afford maximum vision while keeping out wind, snow, sleet, rain and dust.

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B.F.Goodrich



85 million tons handled at belt cost of 9¢ per 1000 tons

MORE than 85 million tons of copper ore have ridden that B. F. Goodrich conveyor belt since it was first installed 17 years ago at the Chile Exploration Company, Chuquicamata, Chile.

In all that time the belt has cost the company less than $180 for repairs. And the company reports it still looks good for two more years! Here are some of the reasons for the long life, low maintenance costs.

The square-edge construction, found only in B. F. Goodrich belts, insures greater flexibility, helps the belt travel more easily, with less strain, less wear. This is because each ply of fabric runs only from one edge of the belt to the other. Edges are bonded, won't separate. Belt troughs perfectly whether loaded or empty.

Special chemicals, developed by B. F. Goodrich, are added to the rubber to keep it "live" and elastic, help it resist the effects of age, sun and weather. Belts are made under uniform tension, so that all fibers work together; seamless plies are used to avoid weak spots; patented layers called "breakers" are added to stand hard blows; mildew treatment is included to protect fabric.

This is why so many B. F. Goodrich belts—like the one in the picture—have far outlasted other medium-priced belts, and have cut the costs of hundreds of industrial operations. Let your B. F. Goodrich distributor show you how to get the best conveyor belt service for the lowest possible cost. *B. F. Goodrich Industrial Products Company, Dept. M-718, Akron 18, Ohio.*

B.F.Goodrich

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ROCK

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This $3 million dollar expansion involves four innovations in material handling and manufacturing controls

Marine Minerals Dredges Sand and Gravel for Rare Minerals

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"...this JOY CHAMPION BLAST HOLE DRILL was so good We Bought TWO More"



"IT OUTDRILLS SEVEN CHURN DRILLS"

at the G. & W. H. Corson Quarry, Plymouth Meeting, Pa.



CHARLES LAUMAN
CONTRACT BLAST HOLE DRILLER
NORRISTOWN, PA.

"That's not all," states Contract Driller Charles Lauman. "Most of our drilling is in hard, tough dolomite with strata tilted at all angles and loaded with clay pockets and clay seams. We have found that the 58-BH Joy Champion will drill a smoother vertical hole wherever the hole is spotted. This eliminates toes and gives our customers a straight vertical face. We're convinced it's the best machine for the job—so much so that we bought two more on the strength of this one's production."

The Joy Champion DRILLS DRY with a tri-cone roller bit which continuously pressure-cuts the rock. An air-blast, forced down the drill pipe and through the bit, cools the bit and forces cuttings to the surface.

The Champion drills straight, smooth-walled, easily loaded holes up to 7⅞" diameter and to any quarrying depth required. It moves fast between holes and sets up quickly for drilling on three hydraulic jacks. Two Champion models—Mediumweight and Heavyweight—can be furnished with either electric or diesel drive. ***Joy Manufacturing Company, Oliver Building, Pittsburgh 22, Pa.*** In Canada: *Joy Manufacturing Company (Canada) Limited, Galt, Ontario.*



Consult a Joy Engineer

OR **Write for FREE Bulletin 115-27**



WSW R5274-115

JOY

PIONEER AND WORLD'S LARGEST MANUFACTURER OF ROTARY BLAST HOLE DRILLS

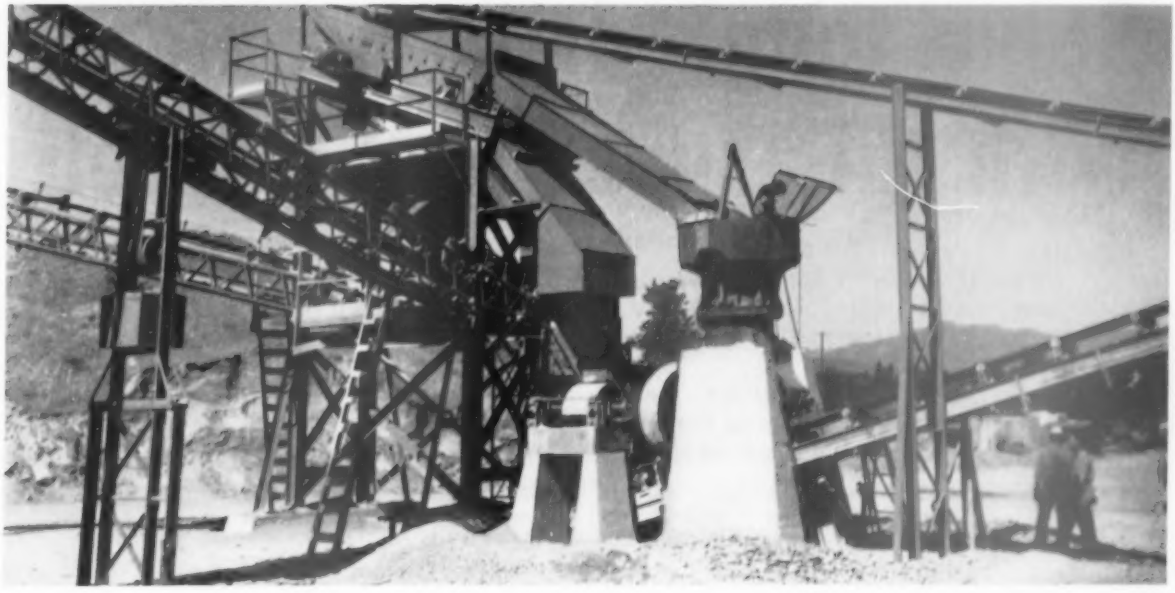
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"TRAYLOR-MADE" TO TOP YOUR PRESENT TONNAGE

More than 806 operators are currently using Traylor TY Reduction Crushers to achieve increased production, more economical operation and reduction of down-time. This enviable record of efficiency, dependability and economy is the result of the many original Traylor design features engineered into TY Reduction Crushers.

Traylor TY Crushers are of compact design . . . requiring minimum floor space and head room. They feature Traylor original Non-chokable Bell Head with spring suspension and Curved Concaves of Manganese steel. The Bell Head and Curved Concaves form a crushing chamber in which each feed zone has a greater capacity than the preceding zone. This greatly reduces packing and choking . . . the main cause of bottlenecks and lost production in crusher operations.

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TY Reduction Crushers are Traylor-Made in six sizes, with feed openings from 3" to 22" and capable of crushing from 4 to 590 tons of rock per hour. For complete specifications and explanation of all the outstanding features of Traylor TY Reduction Crushers, write for a copy of Traylor Bulletin #7112.

Traylor

TY REDUCTION CRUSHERS



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Intense heat no problem for Super Belts

This hydraulic press at Hackney Iron and Steel Co., Enid, Oklahoma, shapes red hot steel plate into tank heads.

The flat leather belt formerly used on this type of press, would stretch, slip, and come off. Tightening the belts only overloaded the bearings. For this press, a Gates Super Vulco Rope drive was chosen because it withstands the near-by intense heat, and its extra horsepower capacity permits lighter weight sheaves; thereby reducing load on bearings.

Claude King, maintenance superintendent, reports: "This Gates V-belt drive has operated 8 hours a day for 5 years without lost time due to maintenance."

Super Belts on vibrator last 7 times longer

James Gann, general superintendent of John B. LaGarde, Inc., Anniston, Alabama, reports:

"Practically every condition exists to shorten V-belt life on the vibrator drive of this concrete block machine. The machine starts and stops 4 times a minute. Intense vibration must be absorbed by the V-belts to protect motor and bearings. Sand and concrete, oil and grease all get into the drive.

"With Gates Super Vulco Ropes, we get about 7 times the average life we received from any other make, It is hard to believe that belts can take this punishment, but Gates Super Vulco Ropes do it."

Solve tough drive problems with this super tough V-belt

If present V-belts are wearing out too fast . . . if heavy shock loads . . . oil and heat . . . or other conditions are causing too frequent replacement . . . here's the answer:

Gates Super Vulco Rope—the oil and heat resistant V-belt with 40% more horsepower capacity. Easily handles heavy shock loads.



That means longer V-belt life and *cost savings two ways*—savings on belt replacements and savings on maintenance down-time.

Let a Gates V-Belt specialist help you solve *any* tough drive problem. He'll make recommendations without obligation. Gates offices and distributor stocks are listed in the phone book yellow pages in all major industrial centers. The Gates Rubber Co., Denver, Colorado—*World's Largest Makers of V-Belts.*

The Mark of Gates *Specialized Research*

TPA 104

Gates SUPER VULCO ROPE Drives

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Gulf Quality Lubricants and **Fuels**
contribute to economical equipment operation
at Alabama Aggregate Company



(Below) Part of the fleet of hauling units operated by the Alabama Aggregate Company, Fortson, Ga. (Right) R. E. McWaters, Superintendent, shows Gulf Sales Engineer Charles J. Cason, Jr., a connecting rod from the engine of the diesel electric set that provides electric power for the plant. Recently disassembled for inspection, all parts of this engine were found to be in excellent condition after over 7000 hours of continuous operation with Gulf Super-Duty Motor Oil.



Ask the Alabama Aggregate people—and many other progressive organizations in the industry—why they prefer Gulf products, and you'll probably get an answer something like this: "Gulf lubricants provide an extra margin of protection for equipment, keep maintenance costs at rock bottom levels. Gulf fuels help us to get top engine performance because they burn evenly and completely. And Gulf's cooperative engineering service helps us select just the right fuels and lubricants for every piece of equipment."

The chances are your operation can also benefit from Gulf quality products and helpful service. Consult the telephone directory for the number of your nearest Gulf office, and ask a Gulf Sales Engineer to call.

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GULF

THE FINEST PETROLEUM PRODUCTS FOR ALL YOUR NEEDS

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As fast as trucks on 9-mile cross-town trip . . .

Michigan Tractor Shovels handle all loading at 3 scattered pits

Suppose that sometime soon you have the same problem that 15 months ago faced A. Courchesne, Inc., El Paso (Texas) commercial rock firm. Business has boomed so much you find it profitable to work several locations at once. (In Courchesne's case, he started producing railroad ballast a mile from his main pit, and began crushing colored roof stone at another site nine miles from the pit.) Slow-moving crawler-loaders, you know, aren't practical for working at more than one location. Purchase of more crawlers costs more than you want to spend. So what do you do?

Do what Courchesne did and your problem is solved!

Performance earns repeat order

Courchesne traded a crawler-loader for his first Michigan, a 1⅜ yard Model 125A, 15 months ago. Its performance was so good that when business continued to boom, he bought another Michigan, both from local distributor Contractors' Equipment & Supply Co.

Output averages over 1,500 yards daily

Today, the two Michigans load 1,500 to 2,000 cubic yards of stone every 8 hour day. The owners say each *equals* a *1¼ yard power shovel* in output. Each works at three or four locations per shift, depending on customer re-



Michigan Tractor Shovel has ample power to load all the many kinds of stone produced at Courchesne's three pits . . . . . limestone flux for smelters . . . sand and concrete aggregates for building . . . slag ballast for railroads . . . gravel for water-well packing . . . crushed red, buff, green, and "glitter-white" stone (shown here) for built-up roof construction. The two Michigan Tractor Shovels combine to load 1,500 to 2,000 cubic yards per eight-hour day.



Three passes of Michigan's 1⅝ yard bucket heap the company's 5 yard dump truck. Despite rugged use, Owner Tom Courchesne reports both Michigans "amazingly trouble-free. And," he says, "these mobile units have let us gear our loading to the flexibility of our sales . . . something never before possible in the 69 years we've been in business."

quirements. And speed! According to General Superintendent Mike Barrueta, either Michigan can leave a pit together with the company's five-yard dump trucks, travel through city traffic on its own rubber, and be at the new loading site *at the same time as* the trucks. Power steering and smooth-acting four-wheel power brakes allow the Michigan Tractor Shovel to make full use of its 27 mph speed on concrete pavement, blacktop, cross-country trails, or on the pit floor.

Many other Michigan owners have similar speed and production advantages to report from their Tractor Shovels. The complete power-train—torque converter, non-stop power-shift transmission, shock-reducing planetary axles—was designed and built entirely by Clark, specifically engineered to give more useable speed, power and traction than you've ever seen on a rubber-tire tractor shovel. For proof, ask your Michigan distributor to demonstrate. You name the job . . . and the size Michigan you want to see, 1 yard, 1⅛ yard, 2¼ yard!

CLARK EQUIPMENT COMPANY
Construction Machinery Division
2481 Pipestone Road
Benton Harbor 33, Michigan
Michigan is a registered trade-mark of

CLARK® EQUIPMENT

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Completed in 1954, this Research-Cottrell precipitator cleans the gases from Kiln No. 5 of Missouri Portland's Prospect Hill Plant. The gases from this rotary wet process kiln pass from the kiln end housing, through the precipitator, induced draft fan and then up the stack.

Rapping puffs were eliminated in this installation with Research-Cottrell's electronically controlled M. I. Rappers. This method of continuous, sequential rapping avoids dust re-entrainment in the gas stream and assures optimum precipitator performance at all times.

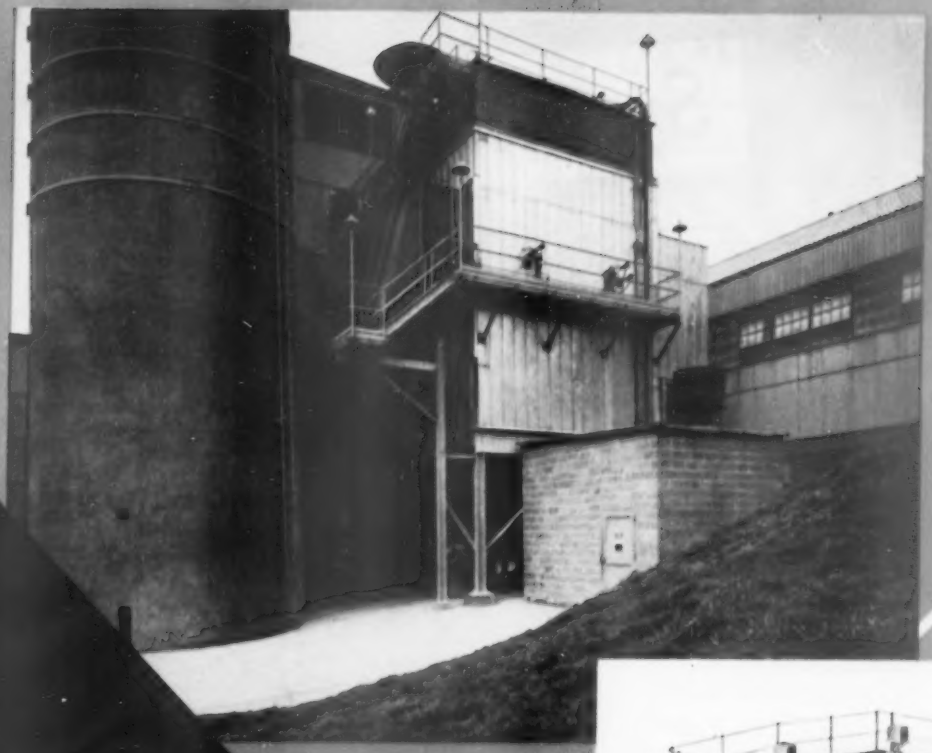
Research-Cottrell Precipitator at Missouri Portland

In addition to this installation, Missouri Portland has ordered three more Research-Cottrell precipitators. One, installed early this year, cleans the gases from Prospect Hill's 12′ x 450′ wet process kiln.

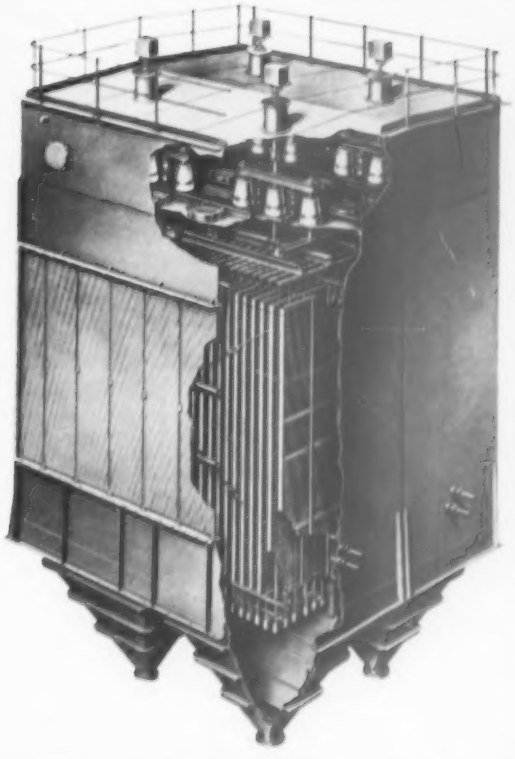
Two other units have been ordered for two dry process kilns at the Sugar Creek Plant, Kansas City, Mo. M. I. Rappers will be included on all these installations.

For a detailed description of Research-Cottrell precipitators and their applications in the cement industry, write for Bulletin GB.

RC 186



At Left:
Shows Research-Cottrell precipitator, connecting flues and stack. Cement block building in foreground at right is substation which contains two half-wave rectifier sets and M. I. Rapper control equipment.

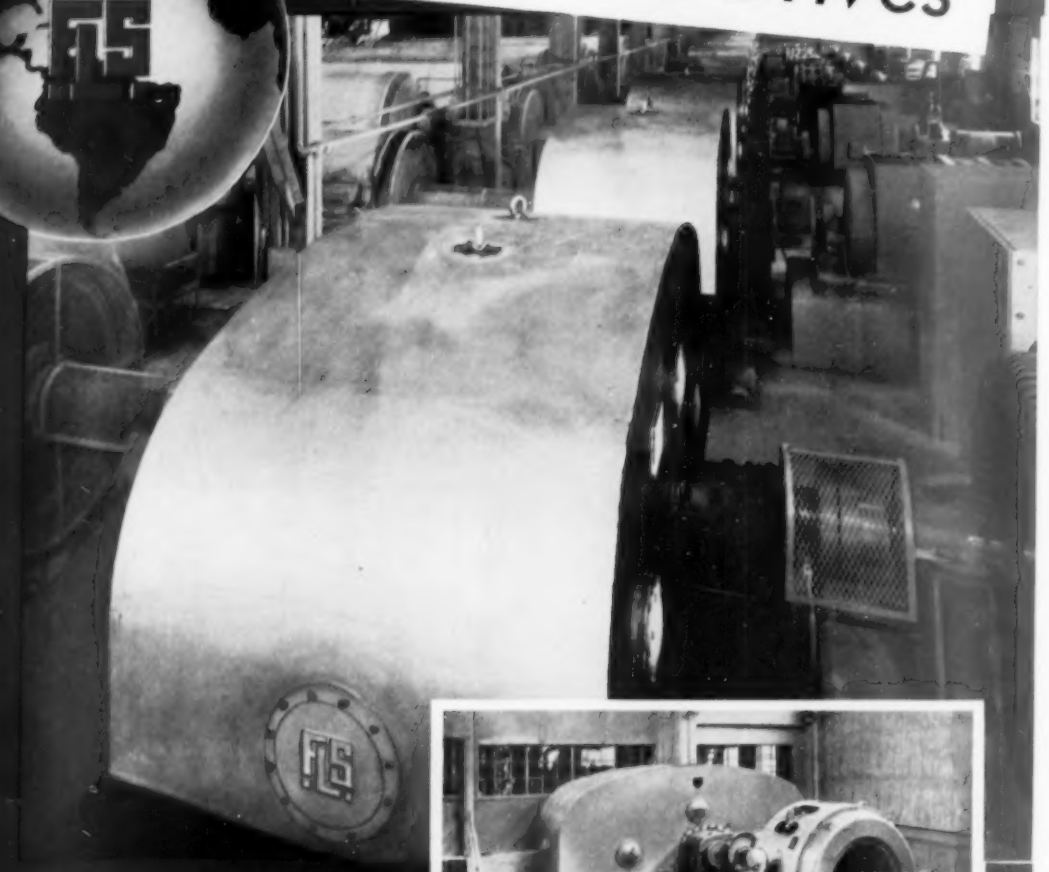


At Right:
Cutaway drawing of the Research-Cottrell expanded metal plate precipitator installed at Prospect Hill Plant of Missouri Portland Cement Co.

Research-Cottrell, Inc.

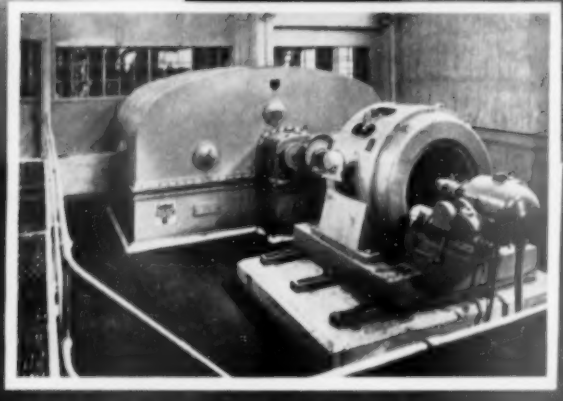
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Driving station for large clinker mill showing motor and Symetro gear in separate enclosure.

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What's Happening

IN OTHER FIELDS OF INTEREST TO THE ROCK PRODUCTS INDUSTRY

September, 1956

Construction of a 13-mile roadbed for Southern Pacific railroad across the Great Salt Lake will get underway in October, when the first of an estimated 30,000,000 tons of gravel start down a 2-mile long conveyor system. An average of 75,000 tons of gravel per day, a U.S. record for overland conveyors, will be moved from the gravel hill to the lake. Even more unusual than the high speed is the fact that the main part of the conveyor system will require little or no power from outside sources once it gets rolling. This is because the conveyors will coast downgrade. In fact, energy created by a braking process will furnish power for gravel-excavating equipment. Twenty-six months are estimated as needed to complete the project.

Corrugated fiberboard has been turning up in a variety of uses, one of the newest being as form material for cast concrete building sections. Two Indianapolis firms have pioneered the use of this material in turning out 350 individual unit roof panels of reinforced concrete. Advantages of the fiberboard forms over wood lie in reduced labor costs in assembling the units, especially where complex forms are needed, and in their disposability after use, requiring no cleaning.

Returning from its maiden voyage from Chicago to South America, the British vessel Montclair carried a cargo of 1150 tons of portland cement from Barranquilla, Colombia. This shipment is believed to be the first direct shipment of that commodity ever to be received in Chicago from South America, though substantial amounts are received each week from Europe. More Colombian cement is expected before the end of the current season.

It took a geologist at the University of Minnesota to identify a recent find in a gravel pit near Worthington, Minn. R. E. Sloan, assistant professor of geology, identified the fossil as the molar tooth of a woolly mammoth, an extinct giant resembling the modern Indian elephant. The tooth, 8-in. high and with an 8-in. root, was kept by the university as a specimen.

A German archeologist, Dr. Alfred Rust, reports that he has uncovered in a gravel pit in Meiningen 50 handsome sandstone tools that he estimates are a million years old. Dr. Rust claims that these are the oldest traces of human civilization. Meiningen is in East Germany, 10 miles from the West German border.

Four million tons of sapphire bearing rock have been acquired by United States investors who purchased the rich Yogo deposit in Montana from its British former owners. Mining operations will be resumed after more than a generation of inactivity.

Heavy construction awards, nationally, totaled $13,831,000,000 for the first 32 weeks of 1956, which was an increase of 18 percent above the corresponding period in 1955, according to **Engineering News Record.**

An $80 million South African manufacturing plant is pioneering in the synthesis of oil from coal, according to **Chemical and Engineering News.** Using the low-grade bituminous coal plentiful in the Johannesburg region, the government-financed project gasifies the coal, purifies the gas, and treats it by catalytic synthesis to produce gasoline and diesel and fuel oil. Other products will be paraffin waxes, methanol, ethanol, propanol, butanol, acetone, methyl ethyl ketone, benzene, toluene, xylene, and many other chemicals. Spokesmen predict that the solvents may form the basis of a synthetic rubber industry, and that the phenols can start a raw-material industry for the plastics products factories of the country.

Bamboo-reinforced concrete, "Bamboo-crete," is being tried in Communist China housing projects for precast floor slabs up to about 8-ft. span, according to a broadcast from radio Peiping. The material is also used for lintels, and door and window frames. Experiments are underway with bamboo-reinforced concrete pit props, piles, drainage conduits, and caissons. A broadcast mentioned use of bamboo-crete as long ago as 1915, "but without scientific investigation."

Solid hydrocarbon deposits (gilsonite) found between layers of sandstone and shale in Utah will be the raw material fed via a 71-mile pipeline to a processing plant near Grand Junction, Colo. Water pumped through the pipeline will carry along small pieces of the material from mine to plant. Coke and gasoline will be produced at the plant when construction is completed next spring.

A new photographic method for measuring the "give" of a road surface under the wheels of a moving vehicle is being developed at Ohio State University. As described by Professor Robert F. Baker, one of the originators, the method records the actual deflection of a pavement as a load passes over it. No instruments are required to be set into the pavement, an advantage over methods previously tried.

An excursion boat was diverted from its pleasure-seeking routine on the Missouri River when from its decks was sighted a runaway barge. Seeing its duty, the excursion craft came up alongside the barge and nudged it to the shore. Apparently two teen-age boys were responsible for releasing the empty sand barge from its moorings.

An estimate furnished by 108 United States Rail Carriers indicates total gross capital expenditures of $1,317,985,000 for the year, an increase of 45.1 percent over the actual expenditures for 1955. First quarter expenditures in 1956 totalled $297,715,000.

Canadian inland waterways ships are trying out lifeboats made of fiber glass. They are said by the makers to be lighter, stronger and less perishable than wooden boats.

Chlorinated copperas and lime are being considered for use as coagulants in the wash waters at a British gravel washing plant to reduce colloidal matter through coagulation and sedimentation.

THE EDITORS



500′ PER 9 HR. DAY IN TENNESSEE LIMESTONE: For the rock portion of the 351,000 cu. yd. excavation for Capitol Hill Redevelopment project at Memphis, Tenn., J. B. Michael Construction Co. powered their two wagon drills with a Jaeger rotary "600" compressor. "We start it and never worry about plenty of air for the two wagon drills, averaging 500′ per 8-hour day, without lugging or overheating", says job superintendent David B. Phillips.

Jaeger 600 Rotary . . . *your most efficient power for wagon drills*

A Jaeger "600" rotary compressor produces the same 600 cfm of air as other "600" compressors, *using the same 6-71 GM diesel engine at 100 to 150 rpm slower speed (1650 rpm instead of 1750 or 1800).*

On long hours of steady drilling this slow, cool, efficient operation means substantial fuel savings, fewer fpm of engine piston travel, up to 9000 fewer compressor revolutions every hour you work.

Smaller Jaeger Roto Air Plus[8] units have this same characteristic of low speed, high efficiency performance. It will pay you to get full details or demonstration from your Jaeger distributor—or let us send you Catalog JCR-5.

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When an experienced, successful aggregate producer like Elmer Larson, Inc., with headquarters in DeKalb, Illinois, reorders the same equipment again and again, you can be sure that equipment must be right.

Elmer Larson, Inc., operating Eagle equipped plants in Illinois, recently installed the complete Eagle Washing-Classifying Section at their Peru, Indiana, plant which—like the others is performing highly satisfactorily. It has processed 325,000 tons of material in 5 months and has 220,000 tons yet to be furnished on the contract for air base material.

Material to tough Navy specifications is being produced. The Eagle section consists of two 30′ Eagle Double Log Washers to scrub, abrade and clean gravel; an Eagle 28′ Water Scalping-Classifying tank with a 2-cell Collecting-Blending Flume; a 24″ dia. x 22′ Single Screw Fine Material Washer-Classifier-Dehydrator which recovers fines from a 2-deck gravel wet screen, and a 36″ dia. x 25′ Double Screw unit processing concrete sand.

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EDITOR'S PAGE

HERE'S A SHOW FOR YOU

THE COMING CONVENTION AND EXPOSITION of the American Mining Congress will provide a double-barreled chance for producers of non-metallic minerals to catch up with the whirlwind progress being made in the Rock Products industries. Mark your calendar for the meeting in Los Angeles on October 1-4; what you will hear and what you will see there will make it worth your while.

The convention and show in the past has accented the mining and processing of metals. But the annual output of industrial minerals has grown so steadily over the past decade that their relative importance in the mining industry has been brought into true perspective. The Rock Products industry now has no peer among mining groups in productive ability. It is the only mining industry that produces in excess of **one billion tons** of materials annually.

The American Mining Congress has recognized that growth by setting aside at this year's convention two complete sessions for discussion of industrial minerals' problems and processes. The opportunity thus is being given to the men in our fields to participate, and it is apropos that Rock Products producers take advantage of that opportunity.

There are two sections of the meeting: the convention and the exposition. Here's part of what's in store for Rock Products men in the convention sessions:

- What makes a gypsum deposit economic?
- Significant developments in ceramic raw materials and markets.
- Diatomaceous earth in calcium and magnesium silicates.
- Recent developments in limestone, dolomites and cements in California.
- Developments in perlite and other lightweight aggregates.
- Heat processing of pelletized materials as developed for the cement industry.
- Production of specification gravels for concrete by heavy media separation.
- Developments in mining and transportation of gilsonite.
- Shale demonstration plant —mining and retorting methods.
- Underground mining at Crestmore.

To a great extent, these sessions have been designed with you in mind. If you attend, you will be able to take an active part in open discussions that may bear on one of your particular problems. As often happens, open discussion at such meetings is productive of information that can be used to best advantage by operators. The exchange of information between operating men with experience may give you the answer you're looking for, or may prompt a question that will lead to an answer.

That's why it is important to see that your operating men go to Los Angeles. Also, why not send your young men who are just beginning to carve out for themselves a career in the industry? What better chance will they have to hear informed men speak on specific problems; in addition, get the broad industry viewpoint and outlook?

The two full sessions on industrial minerals are of specific importance to Rock Products men, but other sessions of the 4-day meeting—on general industrial topics—can be counted on to hold your interest. Hear Hon. Fred A. Hartley, Jr. give a realistic appraisal of the Taft-Hartley Act today. At the same session on labor relations, Leo Wolman of National Bureau of Economic Research, Inc. will discuss "Union Monopoly."

Interested in the tax question? Senator Thos. E. Martin of Iowa will head a tax panel on Tuesday afternoon, October 2. Nearly the whole gamut of management problems will be covered Wednesday afternoon, including such subjects as the engineer shortage, the significance of non-productive wage costs, and incentive plans. Safety comes in for its spot on the program, too—on Thursday morning. Dust elimination methods and equipment, plus research on silicosis, will be covered adequately.

That's only half of it! The exposition held in conjunction with the convention will give you and your staff the chance to see the latest developments in equipment and supplies designed to provide greater efficiency in operation. You can see the equipment, study it, ask questions about it, and in some cases, operate it. Experienced men will be on hand to answer your questions—more than 2000 of them representing about 160 manufacturers. A good opportunity to see "what's new."

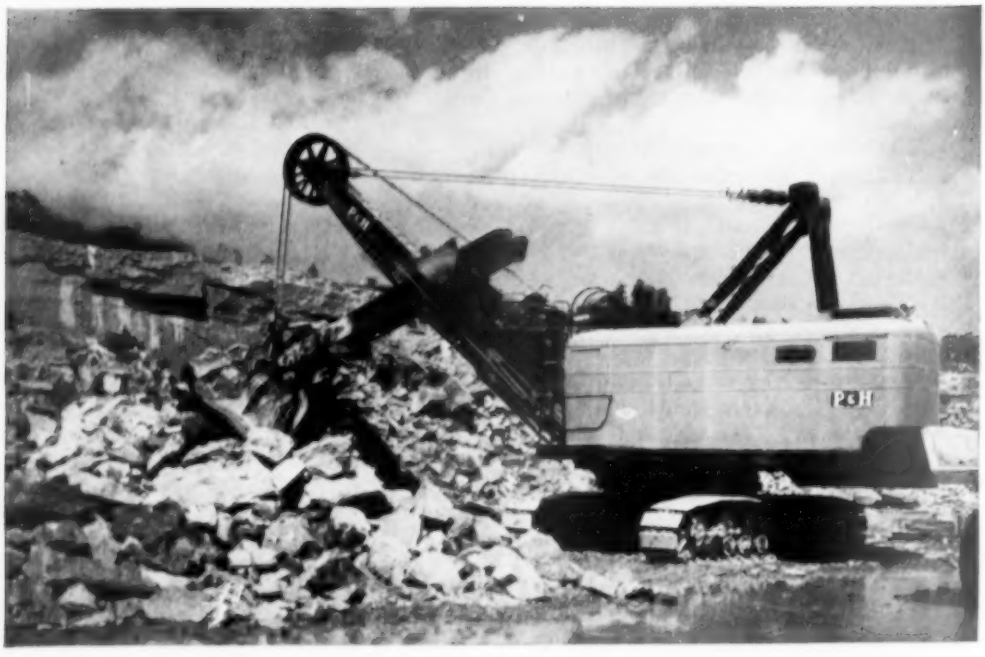
There are other benefits, too. Riverside Cement Company will be host to an inspection party at its Crestmore operations on Friday. There, you can see first hand a new room-and-pillar method employed in mining limestone used for cement manufacture. New 30-ton trolley trucks are used for haulage. The same inspection group will stop to see operations at the Irwindale plant of Consolidated Rock Products Company. Sand and gravel are produced there at a rate of 1000 t.p.h. As an alternative, other inspection trips will be made to the diatomite plant and laboratories of Great Lakes Carbon Corp., or to the Boron operations of the Pacific Coast Borax Div., U. S. Borax and Chemical.

See you in Los Angeles?

George C. Lindsay

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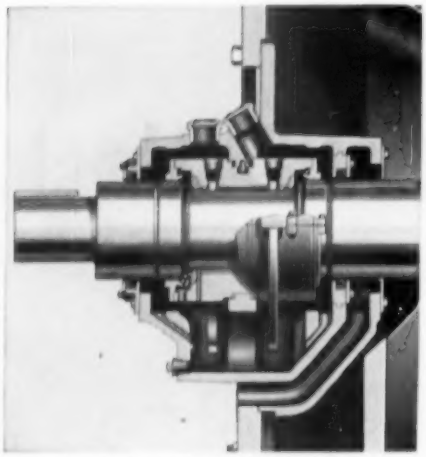
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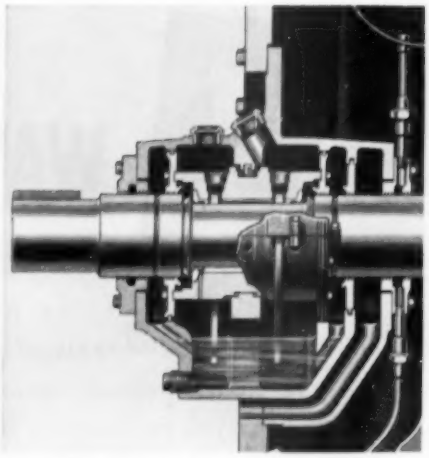
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NEW Bearing Design Means Better Motor Performance

Allis-Chalmers capsule-type sleeve bearings now perfected for complete motor line



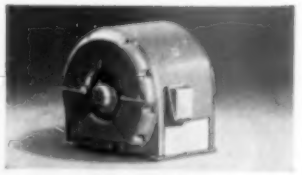
Standard capsule-type sleeve bearing



High speed capsule-type sleeve bearing

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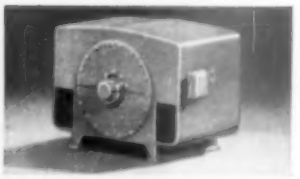
Drip-proof or splash-proof cage motor



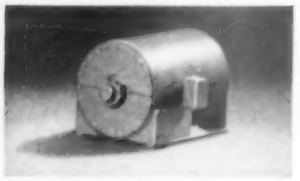
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High speed cage motor



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LABOR RELATIONS TRENDS

KENNETH A. GUTSCHICK

Picketing for Subcontractor Clause Ruled Illegal

A CASE OF SECONDARY BOYCOTT involving non-union truck drivers of a Texas gravel and ready-mixed concrete firm was decided against the union (Teamsters) by the N.L.R.B., and the decision was later upheld by the U. S. Circuit Court of Appeals of New Orleans. In this case the union picketed two general contractors with the aim of bringing pressure to bear on two of their subcontractors (including the rock products firm) to use union drivers. The union demanded that the general contractors sign a so-called subcontractor clause providing that the general contractors would not do business with the subcontractors who refused to adopt the terms of the union's contract with the general contractors.

In its prior decision the N.L.R.B. held that the mere demand on the general contractor for such a clause was permissible under Section 8 (b) (4) (A) of the Labor-Management Relations Act's secondary boycott provision, but that the picketing of the general contractors for this purpose was unlawful. The court (Fifth Circuit) enforced the N.L.R.B.'s order against the union in the case N.L.R.B. v. Local 47, Teamsters (Texas Industries, Inc.), decided on June 5, 1956. What follows is taken from the decision of the Court of Appeals.

"The N.L.R.B. petitions for enforcement of its order entered May 24, 1955[1] against the respondents, Local 47 of the International Brotherhood of Teamsters, Chauffeurs, Warehousemen and Helpers of America, A.F.L., and Union agents Glenn Bailey and Haskell Blankenship. Upon the record made before the trial examiner the board concluded that the respondents had violated the secondary boycott provisions of the National Labor Relations Act[2] in its picketing of the T. C. Bateson Construction Co. and the McCann Construction Co. The sole question before us is whether there was substantial evidence to support the board's finding that the picketing was of neutral employers and was actually aimed at forcing these employers to cease doing business with Texas Industries, Inc., Fort Worth Sand and Gravel Division, and J. W. Hall Construction Co.

Facts of Case

"The record discloses the following: In April, 1954, the respondent union, Local 47, attempted to organize the teamsters in the building and construction industry in the Fort Worth, Texas, area. These efforts, directed assertedly at gaining a higher wage scale, began by the union's seeking recognition as the exclusive bargaining agent of these truckers. Since most of the truckers in the building and construction field were employed by subcontractors, these employers, including the Fort Worth Sand and Gravel Co., were first contacted.[3] Thereupon, in May, 1954, the union hired an 'assistant business agent,' Haskell Blankenship, whose job was to obtain the benefits sought for drivers in the building and construction field. Because efforts through the subcontractors and their drivers directly had proven unsuccessful, it was decided that better results would be obtained by attempting to negotiate with the general contractors.

'Subcontractor Clause'

"To this end, a meeting was sought with the labor relations committee of the Fort Worth chapter of the Associated General Contractors. This association declined to meet with the union on the ground that none of its members employed truck drivers or teamsters. Nevertheless, it was decided by respondents that the individual contractors should be contacted for the purpose of persuading them to sign form contracts which contained clauses relating to drivers' wages, hours and working conditions; and which also contained a 'subcontractor clause' providing that 'any subcontractor engaged to perform work covered by this agreement for employer shall assume all terms and conditions of this agreement.'

"One of the proposed contracts was promptly presented to Robert Spears, a superintendent for the T. C. Bateson Construction Co. At that time Bateson had a contract for the construction of a hangar at Carswell Air Force Base at Fort Worth, and it was in connection with this project that a portion of the controversy arose. Bateson had given a subcontract to Fort Worth Sand and Gravel Co. to supply the concrete ('ready-mix' and 'dry batch') for this job, while, to the J. W. Hall Construction Co., was subcontracted the job of furnishing of labor and materials for laying the concrete floor of the hangar. Spears was agreeable to the contract except for the 'subcontractor clause', and therefore, the contract was not signed at that time. At the suggestion of Spears who said he had no authority to sign such a contract, Blankenship contacted T. C. Bateson, president of the construction company.

"There is a conflict with regard to what was said at this time; however, Mr. Bateson testified that Blankenship told him that he wanted Bateson's assistance in the union's efforts to organize the drivers for Fort Worth Sand and Gravel Co., and unless Bateson gave such assistance it would be necessary to picket the Carswell project. Mr. Bateson was also told that the union had drivers who could do the hauling jobs instead of the non-union drivers employed by Fort Worth Sand and Gravel Co. Mr. Bateson referred the union representative back to Spears, but said his company had been in the habit of using union help whenever possible, and would lend its assistance in trying to avoid a picketing of the job.

"The following day, according to Spears, Blankenship approached him with the suggestion that Bateson buy its concrete from another supplier inasmuch as Fort Worth Sand and Gravel Co. was 'unfair'. He told Spears that the union was then picketing Fort Worth Sand and Gravel Co. but were not getting any benefit therefrom and,

(Continued on page 112)

1. 112 N.L.R.B. 923.

2. 29 U.S.C.A. Sec. 158(b) (4) (A):

"'It shall be an unfair labor practice for a labor organization or its agents — * * *

(4) to engage in, or to induce or encourage the employees of any employer to engage in, a strike or a concerted refusal in the course of their employment to use, manufacture, process, transport, or otherwise handle or work on any goods, articles, materials, or commodities or to perform any services, where an object thereof is: (A) forcing or requiring an employer or self-employed person to join any labor or employer organization or any employer or other person to cease using, selling, handling, transporting, or otherwise dealing in the products of any other producer, processor, or manufacturer or to cease doing business with any other person.'

3. "e.g., Upon petition of the union, the N.L.R.B. in June, 1954, conducted an election among the 'ready-mix' drivers employed by Texas Industries, Inc., Fort Worth Sand and Gravel Division, but this election resulted in a vote against the union.

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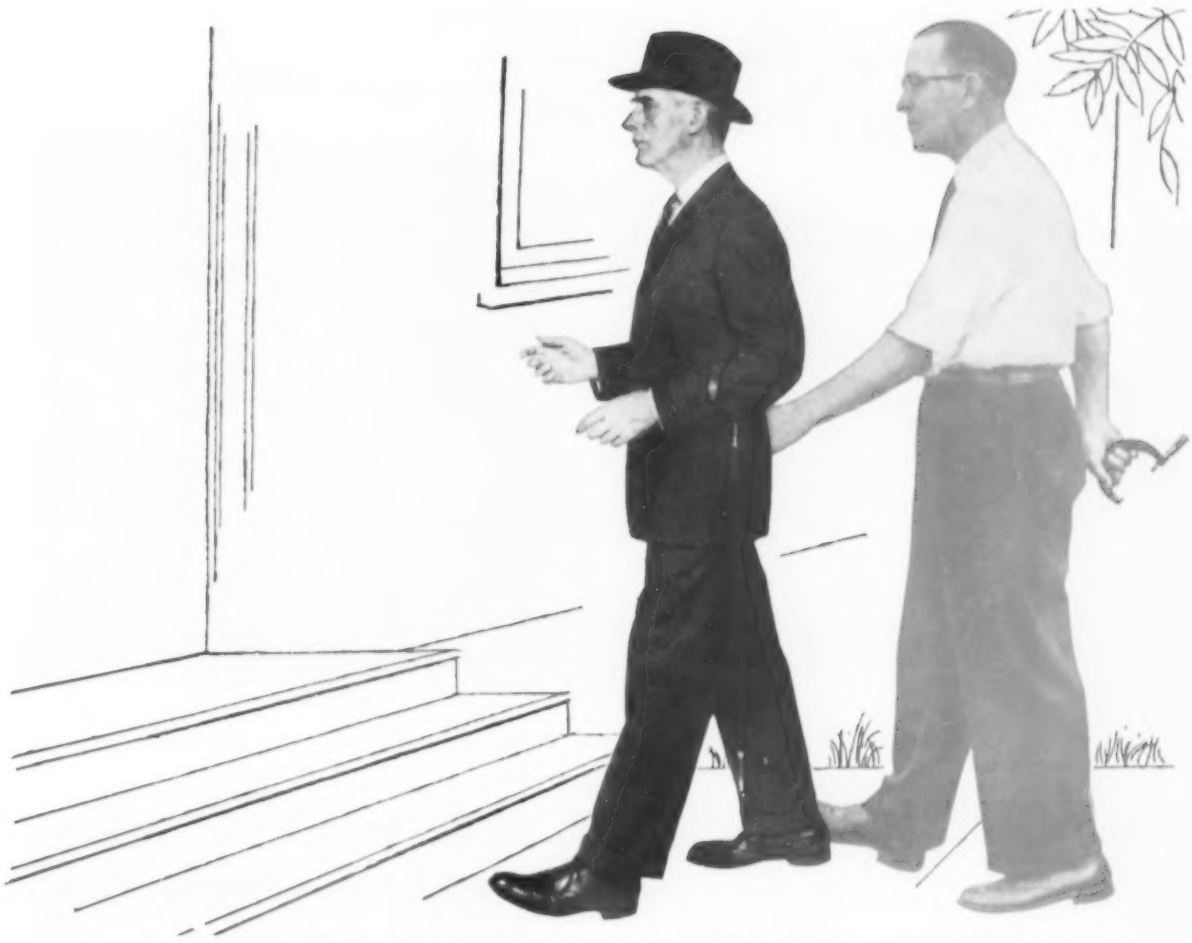
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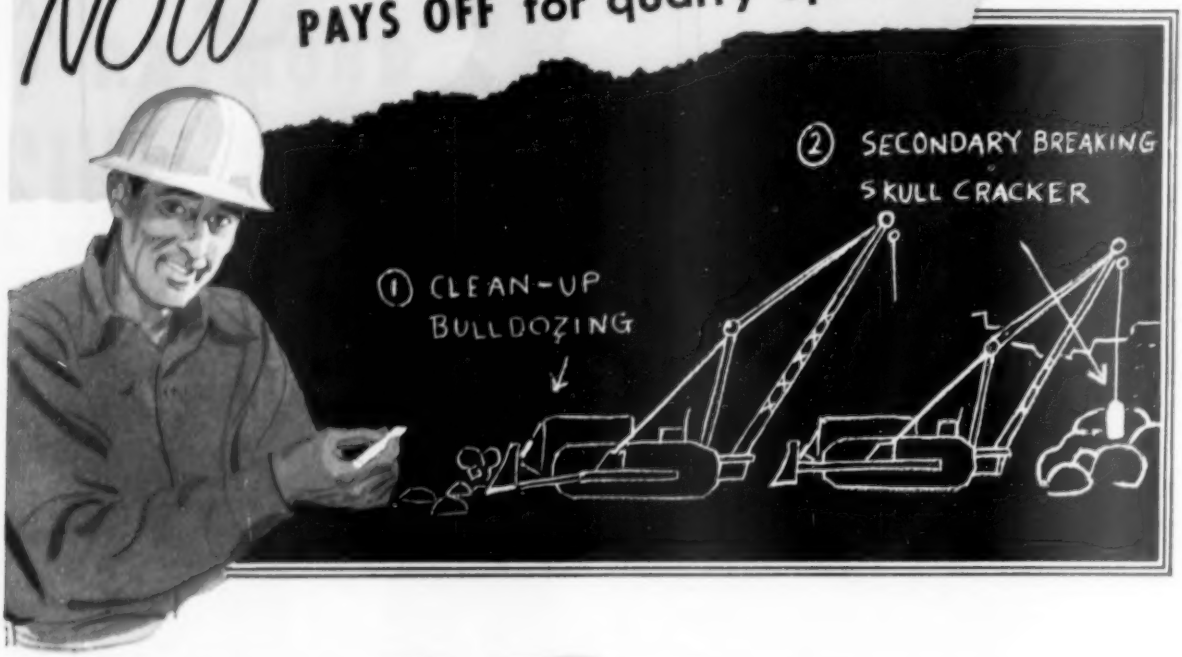
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PEOPLE

IN THE NEWS



Marling J. Ankeny

Bureau of Mines Director

MARLING J. ANKENY has been appointed director of the U. S. Bureau of Mines, Department of the Interior, Washington, D. C., to succeed J. J. Forbes who has retired. Mr. Ankeny has been safety director for the Bituminous Coal Operators' Association since 1952. Born in Carleton, Neb., he was graduated from the College of Engineering, Carnegie Institute of Technology, Pittsburgh, Penn.

P.C.A. Engineer

T. J. DRISCOLL has been named field engineer in the Appleton, Wis., office of the Portland Cement Association, Chicago, Ill., to succeed Berry E. Brevik, who has retired after 30 years of service. Mr. Driscoll, formerly with the Indianapolis district office, is a civil engineering graduate of Purdue University, Lafayette, Ind. Mr. Brevik joined the Association in 1927. He is a graduate of Iowa State College and received his M.S. degree in civil engineering at the University of Michigan, Ann Arbor, Mich.

Superintendent Retires

FRED M. LAMB, superintendent of the Richmond, Ind., plant of American Aggregates Corp., Greenville, Ohio, has retired after 29 years of service. He will be succeeded by Walter Lakoff in the ready-mixed concrete department, and Winford Rose in the sand and gravel department.

Mercer President Resigns

DEAN D. THOMPSON has resigned as president and director of the Mercer Lime and Stone Co., Branchton, Penn. C. Ray Hutchison, vice-president and assistant secretary-treasurer, has been named to succeed Mr. Thompson as president of the company. J. Glenn Hawthorne has been re-elected executive vice-president and general manager; J. B. Grieves, vice-president; William A. Morgan, secretary; and E. F. Herold, treasurer. Mr. Grieves was also elected a member of the board of directors to replace Mr. Thompson.

Heads Canadian Cement Firm

HON. FRANK M. ROSS, lieutenant-governor of British Columbia, has been named president of Lafarge Cement of North America, recently formed British Columbia cement company which will construct a $14,000,000 plant on Lulu Island, 12 miles south of Vancouver, B. C.

Bestwall Vice-President

CARL E. BERZELIUS, formerly general sales manager of Certain-teed Products Corp., Ardmore, Penn., has been named vice-president of Bestwall-Certain-teed Sales Corp., a new firm formed to handle domestic and foreign sales of Bestwall Gypsum Co. and Certain-teed Products Corp.

Universal Atlas Officers

ELMER C. MARTIN has been named director of the commercial research division, Universal Atlas Cement Co., New York, N. Y. He was formerly assistant to the vice-president, general sales division, and will be succeeded by Joseph McCullough, staff assistant.

Chemstone Vice-President

CHARLES E. BROWN has been appointed executive vice-president of Chemstone Corp., Cleveland, Ohio. He was formerly administrative assistant to the president of Minerals and Chemicals Corp. of America, parent company of Chemstone Corp.

Assistant Superintendent

E. WYLLYS TAYLOR, formerly with the research department of Virginia-Carolina Chemical Corp., Richmond, Va., has been named assistant superintendent of the triple superphosphate plant in Nichols, Fla.

Director of Marketing

ANTHONY E. CASCINO has been appointed director of marketing for International Minerals and Chemical Corp., Chicago, Ill. A native of Chicago, he received his B.S. degree in economics at Illinois Institute of Technology and his M.S. degree at Northwestern University, Evanston, Ill. He taught economics at Northwestern and at Ripon College, Wisconsin. He formerly served as director of marketing for the Crosley and Bendix divisions of AVCO Manufacturing Co.

Managing Director

BENGT LUNDGREN has been appointed managing director of International Siporex AB, Stockholm, Sweden, to succeed Bror Sjogren, who has retired. Mr. Lundgren was formerly head of the foreign section which will now be management headquarters.

Named Vice-President

COLONEL W. D. MILNE, retired Louisville district engineer of the U. S. Army Corps of Engineers, has been named vice-president of the Kentucky Stone Co., Louisville, Ky. A graduate of the United States Military Academy at West Point, N.Y., Col. Milne received his M. S. degree in civil engineering from Cornell University, Ithaca, N.Y.

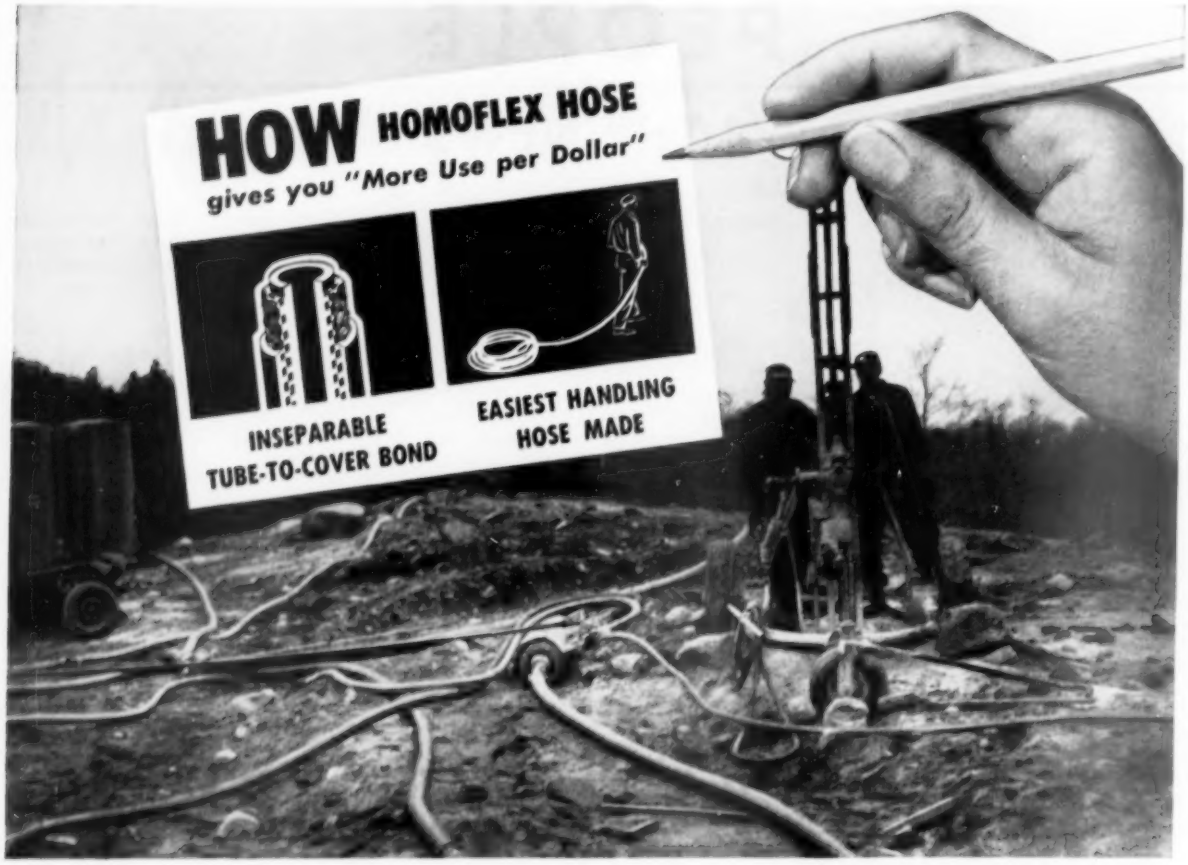
Production Manager

FRANK L. BEGGS, formerly mining and quarry superintendent, Coplay Cement Manufacturing Co., Coplay, Penn., has been appointed production manager at Carbola Chemical Co., Inc., Natural Bridge, N.Y.

Joins Brick Firm

R. FRANK LEFTWICH, inventor of the Leftwich process for manufacturing "Aglite" lightweight aggregate, has been appointed vice-president in charge of engineering for the Sayre and Fisher Brick Co., Sayreville, N. J.

(Continued on page 32)



Flexible Homoflex Hose Takes Rough Handling!

Homoflex Hose offers a combination hard to beat for rugged use. It is engineered to provide maximum flexibility and light weight for easy handling—yet it's rugged and strong to take a beating when it has to be handled roughly on the job. That's why users specify Homoflex for use with air tools, or wherever heavy duty hose is required to handle air, water, and other fluids and gases.

"As flexible as a rope," workers on the job say, because Homoflex Hose coils and uncoils freely in any direction. This mandrel-made hose has no pre-set twist. It resists kinking and eliminates the internal strain that can lead to hose rupture. Specially designed super-strength cord braid is precision applied at just the right angle to permit the rubber tie-gum to completely penetrate and bond the braided plies during vulcanization. This homogeneous inseparable tube-to-cover bond gives Homoflex its extreme flexibility, strength and long durability. Its uniform inside diameter makes easier the fitting of couplings and insures faster flow. Homoflex Hose cuts hose costs because it gets more work done and it lasts longer.

Ask the R/M representative about easy handling Homoflex Hose for your operations. He can also show you advantages of new burst resisting Super-Master BW Hose, the extra heavy duty braided wire inserted construction for high pressure air, water and steam service. General service or special duty, there's an R/M hose engineered for your operations . . . to give you "More Use per Dollar."

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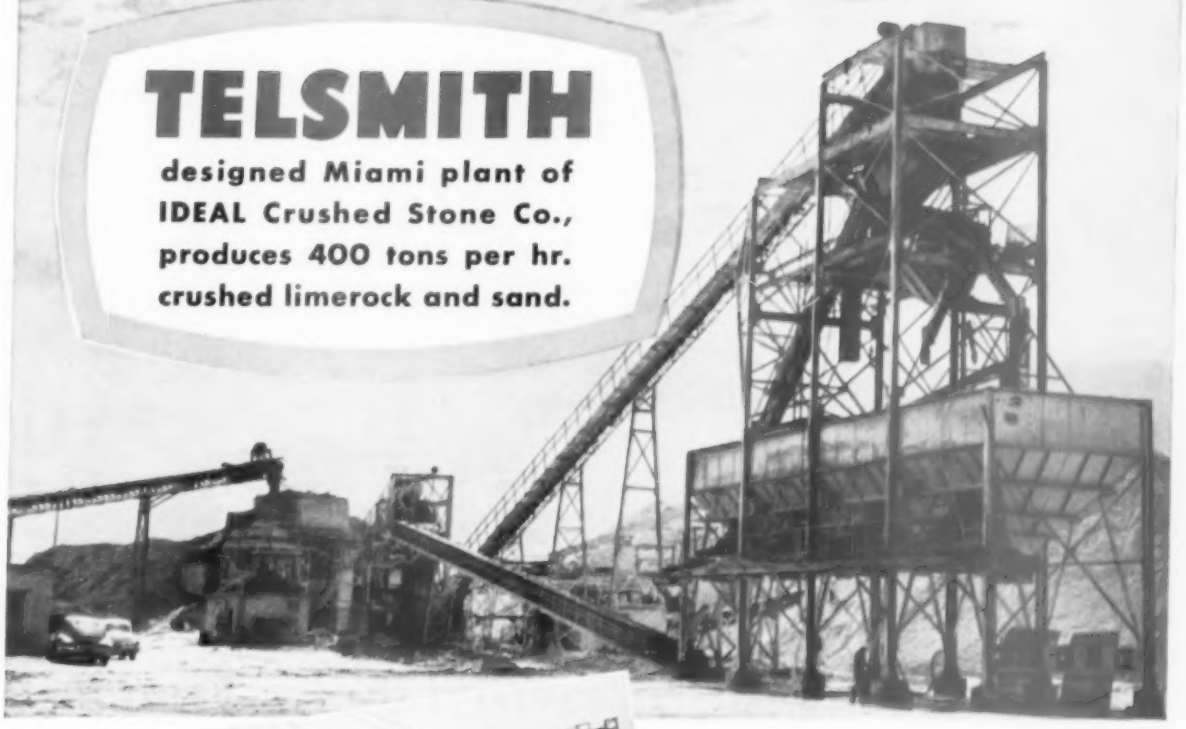
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"IDEAL" aggregate for Florida market

TELSMITH

designed Miami plant of IDEAL Crushed Stone Co., produces 400 tons per hr. crushed limerock and sand.







Telsmith 30" x 25' Twin Screw Sand Classifier.

•

Telsmith 5' x 12' double deck special heavy-duty Vibro-King Screen.

● With a capacity of over 400 tons per hr; 60% rock, 40% sand; this Telsmith-designed plant makes 6 sizes: ¾" to 2½" ballast; 1"-¾", ¾"-½", ½"-⅜", ⅜"-3/16" rock; 3/16" sand. A 4½-yd. dragline digs the raw material; self-dumping barges transport it to plant.

● Ballast goes to railroads. Aggregate qualifies for Florida State, County, and City specs; U. S. Army Engineers; ready-mix, concrete-block, and concrete pipe plants. Send for Bulletin 266.

Q-32

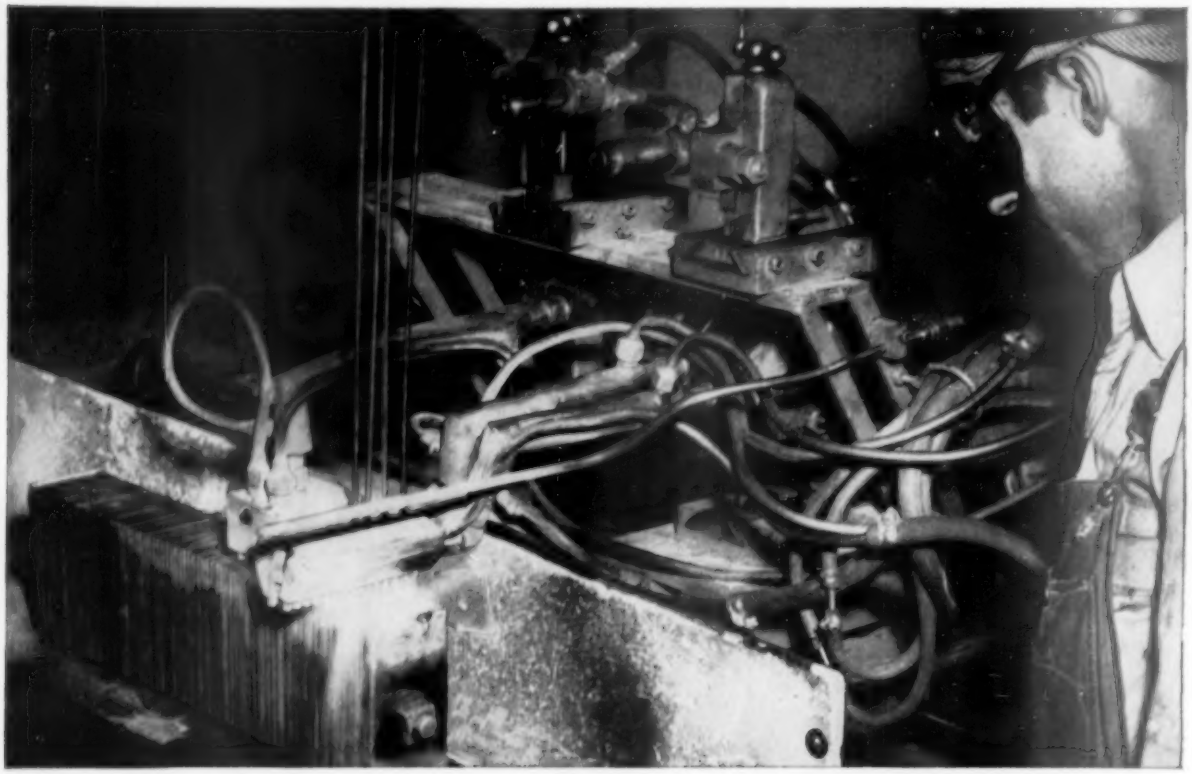
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Hammer Life Increased Four Times by **HARD-FACING**

Hard-facing with HAYSTELLITE tube rod has increased the life of hammers used in a heavy duty grinder by four times. The hammers rotate at from 3000 to 3600 revolutions per minute while pulverizing limestone, mica and other severe abrasives. They are hard-faced mechanically on a model 800 straight-line machine. Seventy hammers are processed at a time, and 1000 hammers are hard-faced in a normal working day.

HAYSTELLITE rod, the hard-facing material used on the hammers, forms an extremely hard surface that has good resistance to impact. It produces a deposit of sharp, irregularly shaped particles of cast tungsten carbide evenly distributed in a matrix of tough steel. The tungsten carbide particles resist abrasion, and the steel matrix cushions the effects of sudden shock.

There are 18 HAYNES hard-facing alloys . . . a wide selection that guarantees you the right rod at the right price for every wear problem. These hard-facing rods have achieved excellent results in the earth moving and quarrying industries when used to protect such parts as cable drums, hammers, crusher rolls, bucket teeth, and conveying screws. They can be the economical answer to your wear problems too.

Ask your local HAYNES STELLITE dealer for a copy of "HAYNES Hard-Facing Manual." It contains descriptive information and application data on the complete line of HAYNES hard-facing alloys. If you don't know the location of your local dealer, write to Haynes Stellite Company, a Division of Union Carbide and Carbon Corporation, Kokomo, Indiana.

See... | Your local Haynes Stellite Dealer

— or —

Write... | to Haynes Stellite Company

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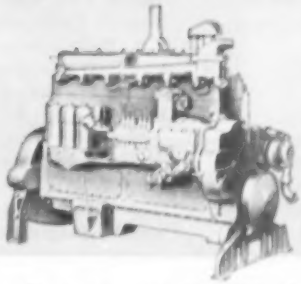
PROOF OF PERFORMANCE!

After 8 years' experience with a D13000, "nothing but another Caterpillar Engine" was considered by the Wenonah Sand & Gravel Co. for its second dredge



This CAT* D13000 Engine drives a 6" pump in a hydraulic sand dredge, operated by the Wenonah Sand & Gravel Co., Wenonah, N. J. There's a 70-foot lift through 600 feet of pipe to the wash tower. The engine, purchased several years ago, is the company's second D13000. According to Earl T. Kroll, Chief Mechanic, here's why: "Having used a duplicate of this engine in another dredge since 1946 with unquestioned economy and reliability, when we wanted to put another dredge into service, there was nothing but another Caterpillar Engine for us, a choice we haven't regretted."

This is just one of thousands of cases where the performance of one Caterpillar Diesel has sold another. There's a reason. These rugged units, available up to 650 HP (maximum), pay off in dollars and cents *on the job*. Simple to operate, they need a minimum of attention and maintenance. And they're sturdily built for a long life of low-cost use in *every* type of construction equipment. What's more, your Caterpillar Dealer stands back of them with prompt, capable service whenever and wherever it's needed!



NOW IN THE CAT POWER LINE-UP: THE NEW D342, AN EVEN MORE EFFICIENT UNIT!

Replacing the D13000, the more powerful, more compact 6-cylinder D342 delivers 210 HP (maximum). And with Caterpillar 4-cycle design, the fuel system requires no adjustment and there are no air boxes or cylinder ports to clean. Your maintenance is reduced to a few minutes a month for oil and filter changes. For complete information about this and other modern heavy-duty engines, see your Caterpillar Dealer.

Caterpillar Tractor Co., Peoria, Illinois, U. S. A.

CATERPILLAR*

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MODERN HEAVY-DUTY DIESEL POWER

U. S. Gypsum Appointments

ARNOLD C. SANDERS, formerly assistant to the vice-president of sales, has been promoted to sales manager of roofing and siding products for United States Gypsum Co., Chicago, Ill. Richard P. Entz has been named development manager of gypsum board products. E. E. Ellwood, formerly manager of the New York sales division, has been made manager of the architect service department, and Robert J. Kay has been appointed district manager in Cincinnati.

P.C.A. Research Manager

CLIFFORD C. CARLSON has been appointed manager of the fire research section of the research department of the research and development division of the Portland Cement Association, Chicago, Ill. Formerly manager of the products and applications section, development department, Mr. Carlson will be succeeded by Joseph J. Shideler, who for the past three years has served as development engineer in the section.

Vice-President of Research

PERCY L. RODGERS has been elected vice-president in charge of research and quality control, Riverton Lime and Stone Co., Riverton, Va. He joined the company in 1932 as plant chemist. A native of Appomattox, Va., he holds a B.S. degree in chemical engineering from Virginia Polytechnic Institute, Blacksburg, Va.

Ideal Manager Retires

F. G. MEYERS, plant manager of the Superior, Neb., plant of Ideal Cement Co., Denver, Colo., has retired after 40 years of service. He will be succeeded by Robert Marsh of Portland, Ore. Mr. Meyers has been manager at the Superior plant for the past six years. Prior to that he was at the Portland, Colo., plant.

Association Vice-President

ROGER H. SLUGG, vice-president of operations, Hamilton Gravel Co., Hamilton, Ohio, was elected vice-president of the Ohio Ready Mixed Concrete Association at the recent annual meeting in Cleveland.

Assistant Sales Manager

JOHN O. HOBBS has been appointed assistant sales manager of the building materials division of the Standard Lime and Cement Co., Baltimore, Md. He was formerly an engineer with the Portland Cement Association.



Ivy H. Smith

Institute Officers

IVY H. SMITH, president and founder of the Ivy H. Smith Co., Jacksonville, Fla., and former president of the American Concrete Pipe Association, Chicago, Ill., was elected president of the Wire Reinforcement Institute, Washington, D. C., at a recent meeting in White Sulphur Springs, W. Va.

Maule's President Resigns

M. F. Pafford has resigned as president of Maule Industries, Inc., Miami Beach, Fla., and will be succeeded by Jose A. Ferre, chairman of the board. Mr. Pafford was executive vice-president and treasurer before he succeeded J. H. Buchanan as president of the firm in 1955. He will remain a member of the board of directors and of the executive committee. He also will serve on a management consultant basis. F. K. Foster, vice-president and sales manager, has been appointed executive vice-president.

McIntyre Retires from Basalt

MALCOLM S. MCINTYRE has retired as general sales manager of the aggregate division of Basalt Rock Co., Inc., Napa, Calif., after 23 years of service. Joseph E. Mirani, who has been with the firm since 1934, succeeds Mr. McIntyre as general sales manager.

Joins Concrete Firm

FRANK J. HOOVER has resigned as secretary of the Fort Scott Chamber of Commerce, Fort Scott, Kan., to become sales manager of the McMichael Concrete Co., Tulsa, Okla. Mr. Hoover spent nearly 25 years in the concrete business before moving to Fort Scott.

Executive Vice-President

ELLIOTT E. BRAINARD has been elected executive vice-president of American Pipe and Construction Co., Los Angeles, Calif., according to an announcement by Robert V. Edwards, president. Dudley A. Dunkle has been made senior vice president and a member of the board of Amercoat Corp., a subsidiary. R. J. McConnell was named vice-president of sales, and D. E. McCoig and L. R. Tollenaere, second vice-presidents. George Mordy was elected to the board of directors, and W. Allen Grubb was made a member of the board of directors of Hooper Concrete Pipe Co., Phoenix, Ariz., and Pipe Linings, Inc., both subsidiaries.

Process Engineer

RALPH VREELAND has been named plant process engineer at the Los Angeles, Calif., plant of the American Potash and Chemical Corp., Los Angeles. Herbert W. Yeagley has been appointed manager of the newly established office in Washington, D. C.

Marquette Superintendent

KARL V. HAUSER has been appointed superintendent of the new Milwaukee, Wis., cement plant of Marquette Cement Manufacturing Co., Chicago, Ill., which is now under construction. He joined the company in 1948 following graduation from Rose Polytechnic Institute, Terre Haute, Ind., with a degree in chemical engineering. The new plant is expected to be in production in December of this year.

Chief Administrative Officer

WILLIAM R. POWELL has been named chief administrative officer of the Livingston Rock and Gravel Co., Long Beach, Calif. He recently resigned as chairman of the Los Angeles Newspaper Publishers Association to accept this position.

Lehigh Service Manager

A. G. FALLAT, formerly assistant service manager, has been appointed service manager of Lehigh Portland Cement Co., Allentown, Penn., to succeed A. G. Watt, who has retired but will continue in an advisory capacity to general sales.

Traffic Manager

GENE FEISE has been named traffic manager for Calaveras Cement Co., San Francisco, Calif. He has been assistant traffic manager since 1954.

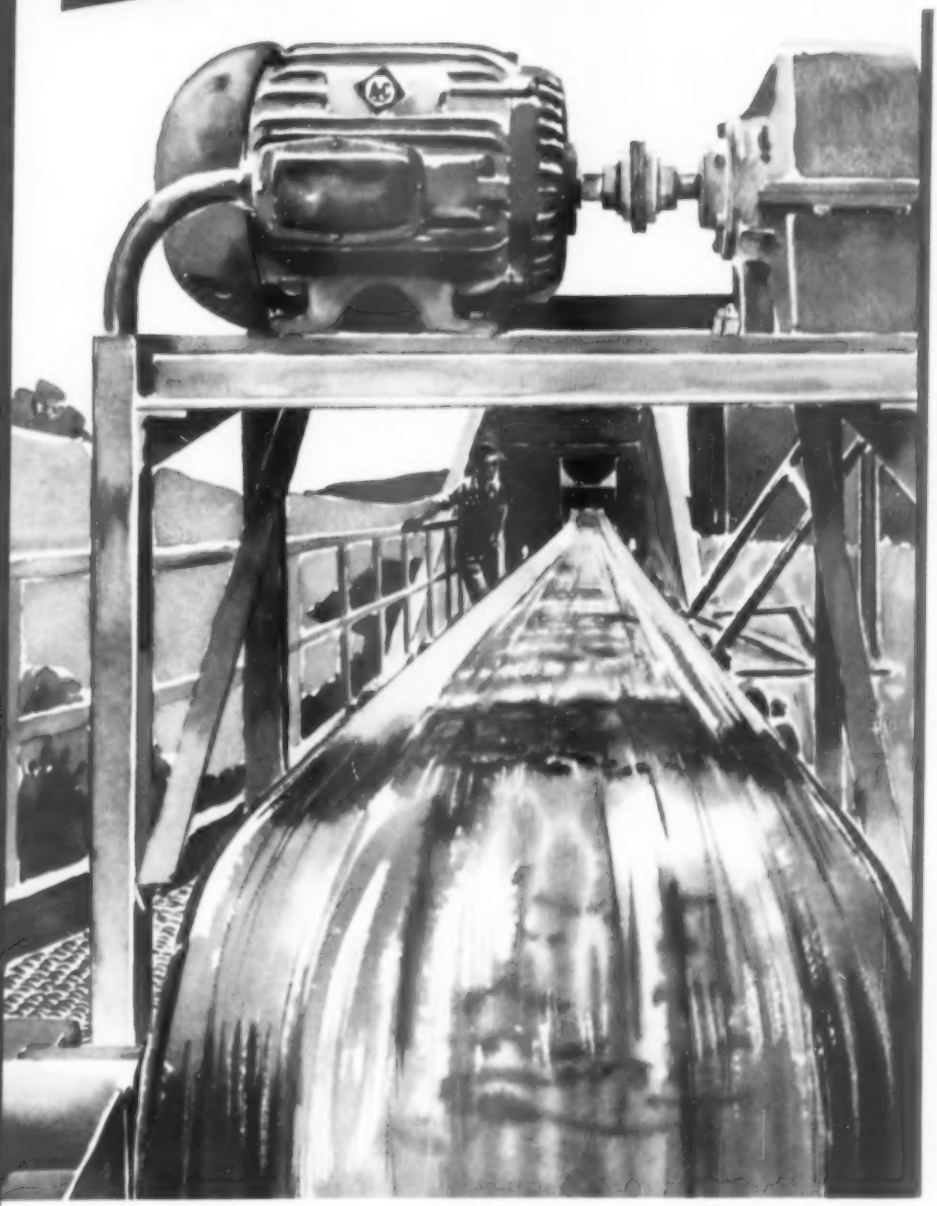
(Continued on page 35)

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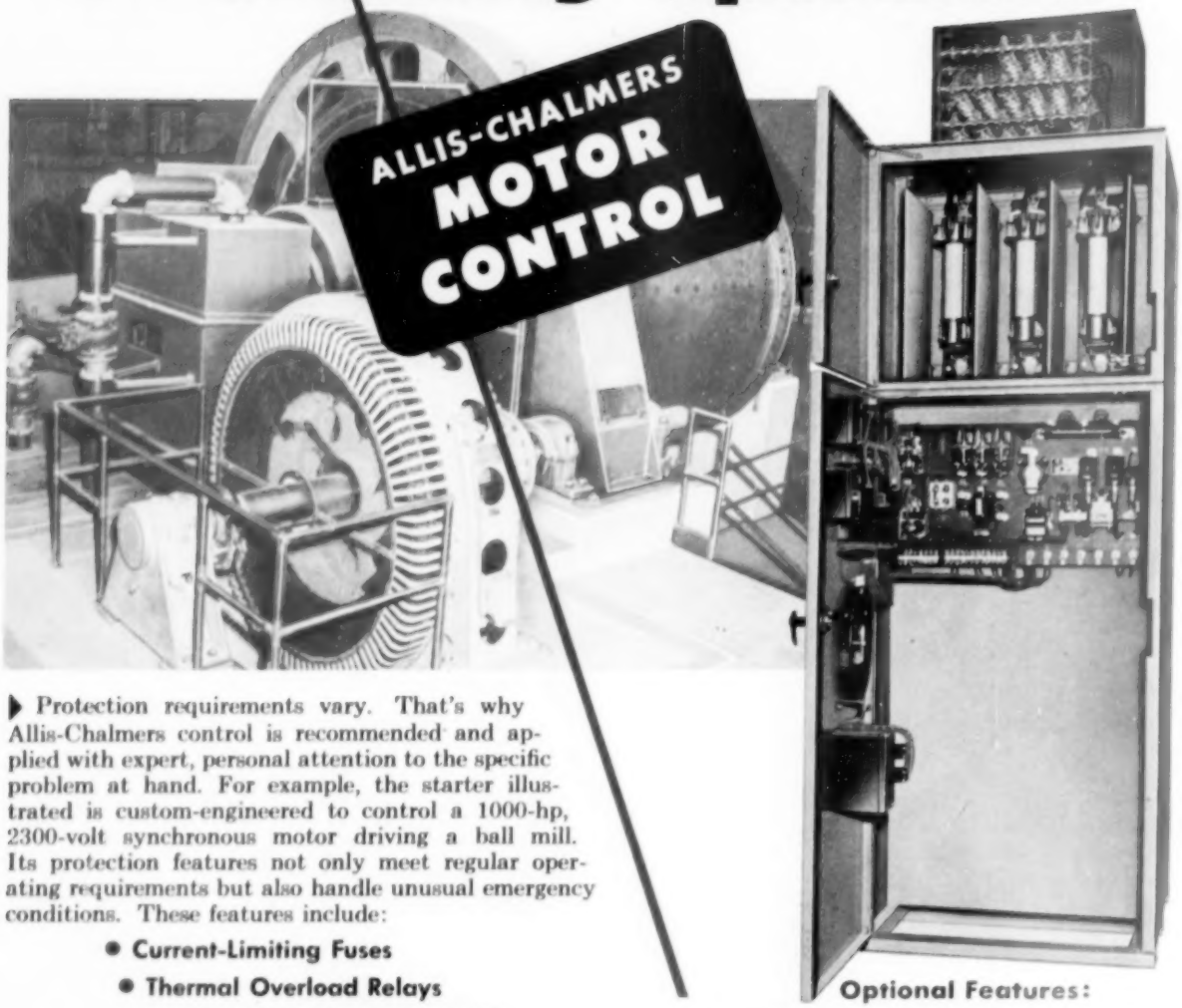
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- **Current-Limiting Fuses**
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- **Squirrel-Cage Protective Relay**
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For complete information, see your A-C representative or write Allis-Chalmers, Milwaukee 1, Wisconsin.

Optional Features:

Exciter voltage relay to prevent starting when excitation voltage is not available; dc field failure relay to shut down motor on field current failure; instantaneous phase reversal and open phase; inching control for positioning mill.

A-4703

A-C ALLIS-CHALMERS



Leland L. Sphar

Association Manager

LELAND L. SPHAR has been appointed engineer-manager of the Concrete Products Association of Washington, Seattle, Wash., according to an announcement by James W. Sullivan, president. Mr. Sphar is a graduate of Carnegie Institute of Technology, Pittsburgh, Penn., with a degree in civil engineering. His most recent position was research engineer for the Legislative Joint Fact Finding Committee on Highways, Streets and Bridges. He has also served as public works engineer for the City of Olympia and as highway economist in the Planning Survey Section for the Washington State Department of Highways.

Calaveras Appointments

T.L. LOVE, SR., has been appointed assistant manager of the San Andreas, Calif., plant of Calaveras Cement Co., San Francisco, Calif. He succeeds the late Marion S. Heard, who died in December, 1954. Mr. Love joined the company as chief clerk in 1934 and has been plant personnel manager since 1948.

Earle M. Bagley, Jr., has been appointed superintendent of raw materials at the San Andreas, Calif., plant of Calaveras Cement Co. Edgar Andersen has been named to succeed Mr. Bagley as assistant quarry superintendent. James C. Powell, formerly with the California State Division of Highways, has been made plant engineer at San Andreas.

Executive Vice-President

ROBERT O. CAMPBELL has been appointed executive vice-president and general manager of Pre-Mix Concrete, Inc., Denver, Colo. He has been with the company since 1952.

District Manager

JOHN C. WALL has been promoted from assistant district manager in the Cincinnati, Ohio, district, to district manager in the Harrisburg, Penn., district of National Gypsum Co., Buffalo, N. Y.

OBITUARIES

JONATHAN BLAINE JOHN, chairman of the board of the Medusa Portland Cement Co., Cleveland, Ohio, and a nationally recognized safety leader, died July 16 at his home in Cleveland Heights. He was 86 years old and until his illness maintained an active interest in the business. Born in Raven Run, Penn., he started his career in the cement industry at Ormrod, Penn., in 1898. His first connection with Medusa was as a consulting engineer in the building of the Silica, Ohio, plant. At that time he was president and general manager of the Newaygo Portland Cement Co., Newaygo, Mich.; Manitowoc Portland Cement Co., Manitowoc, Mich., and the Petoskey Portland Cement Co., Petoskey, Mich. Mr. John was named president of Medusa in 1922 and chairman of the board in 1951. He was credited with being the "father" of the safety movement in the cement industry, and for 10 years was chairman of the Accident Prevention Committee of the Portland Cement Association, Chicago, Ill. He was also known for his success in labor relations. Mr. John was a veteran of 58 years in the cement industry.

BEN R. COLLINS, retired director and secretary-treasurer of the Longhorn Portland Cement Co., San Antonio, Texas, died July 7. He was 56 years of age and had been associated with the company for 26 years. A native of McAlester, Okla., Mr. Collins moved to San Antonio in 1929. He was president, treasurer and director of the San Antonio Manufacturers Association, director of the Texas Manufacturers Association, president of the local chapter and national director of the National Association of Cost Accountants. He was also a director of the San Antonio Chamber of Commerce, San Antonio Builders' Exchange, and was on the advisory committee to the accounting department of A. & M. College of Texas, College Station, Texas. He was also a past director of the San Antonio Research and Planning Council.

ERNEST M. HAMMOND, president and general manager of the Gravel Products Corp., Buffalo, N. Y., died July 28 while on a fishing trip. He was 76 years old. Mr. Hammond, who pioneered the use of ready-mixed concrete in the Buffalo, N. Y., area, joined the company in 1925 as sales manager. He was a member of the National Sand and Gravel Association, National Ready Mixed Concrete Association, National Association of Manufacturers and the Buffalo Chamber of Commerce.

JAMES E. BATES, retired assistant to Harris N. Snyder, president of the Federal Portland Cement Co., Buffalo, N. Y., died July 27. He was 57 years of age. Mr. Bates had been general sales manager for 20 years prior to becoming Mr. Snyder's assistant. He retired in 1955 when Penn-Dixie Cement Corp. acquired Federal Portland Cement Co.

CHARLES B. SNYDER, retired electrical engineer at the Northampton, Penn., plant of Universal Atlas Cement Co., New York, N. Y., died June 19 at Orlando, Fla., while visiting his son, Willard D. Snyder. Mr. Snyder had been electrical engineer at the plant for 50 years. He retired last August.

HAROLD PAUL SAEGER, maintenance supervisor at the Ada, Okla., plant of Ideal Cement Co., Denver, Colo., died July 13 after a short illness. He was 30 years old. He joined the Superior, Neb., plant as an engineer in 1950 and was transferred to the Ada plant in 1955.

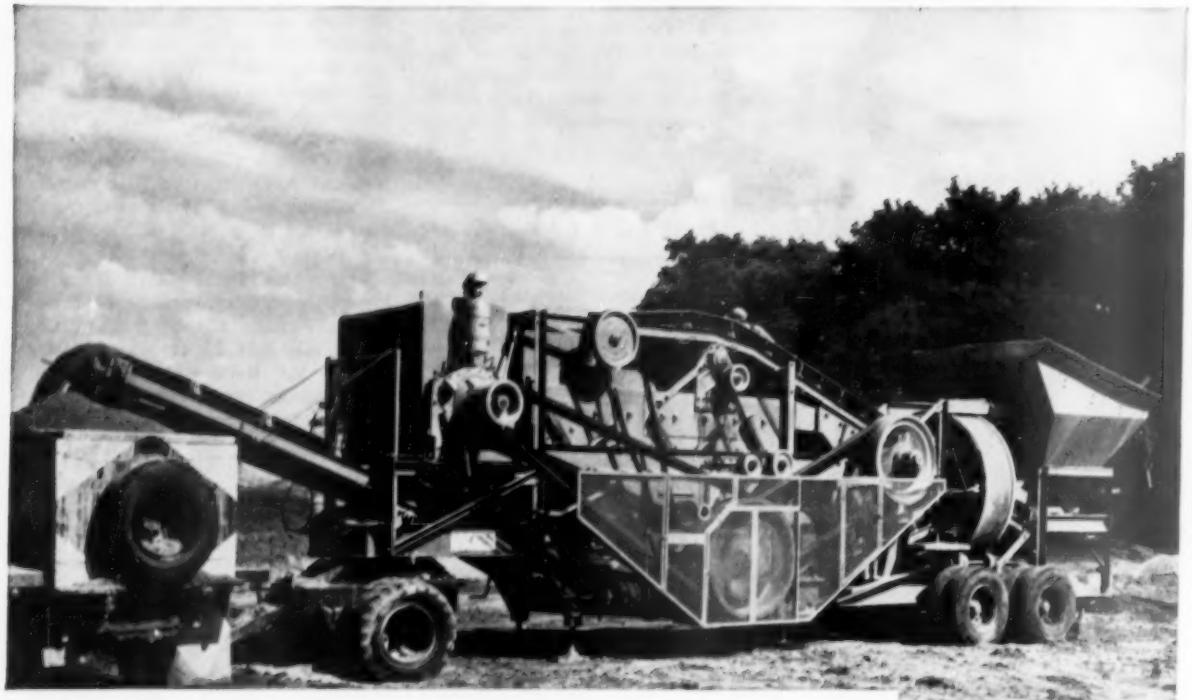
HENRY I. GOLDCAMP, owner and operator of the Goldcamp Sand and Gravel Co., Ironton, Ohio, until his retirement four years ago, died July 3 after a long illness. He was 83 years old and founded the firm which is now operated by his sons.

HARVEY M. GRABLE, retired chief engineer of the Kosmos Portland Cement Co., Inc., Kosmosdale, Ky., died recently. He was 90 years of age and had been chief engineer for 42 years before retiring in 1946.

HARRY E. YOST, superintendent of the Standard Sand and Gravel Co., Wheeling, W. Va., died July 5. He was 49 years old.

ZAIN ARMITAGE, president of Armitage & Son, sand and gravel firm of Lebanon, Ohio, died July 16 at the age of 67.

DR. RALPH KENT HURSH, professor of ceramic engineering, emeritus, at the University of Illinois, Urbana, Ill., passed away July 12.



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PHOTO COURTESY IOWA MANUFACTURING COMPANY

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INDUSTRY NEWS

Cover Picture

THIS MONTH'S COVER ILLUSTRATION shows the expanded Long Beach, Calif., Kaiser Gypsum plant. The plant's annual capacity has been increased to 50,000 tons of hardwall and special type plasters and 210,000,000 sq. ft. of gypsum board products. With an increase of 40 percent in length, the gypsum board production line is now 671 ft. long. An interesting system was devised to control and integrate the three belts used on the board machine with the cut-off knife, and the speed of movement of the "green" boards through the dryer. A dome-shaped 35,000-ton rock storage building is similar to the storage facilities at the Seattle and Antioch plants.



Reopen Limestone Quarry

THE FRANCE STONE CO., Toledo, Ohio, will reopen a limestone quarry at Middle Point, Ohio, which has been inactive since 1944. The company began pumping water from the quarry in mid-July. After pumping operations have been completed, plans are to remodel the quarry buildings and cut an opening under the roadway from the present site to another tract south of the Van Wert Middle Point road where mining operations will be resumed. Trucks will replace railroad cars, previously used in transporting stone to the crusher.

Phosphate Firm Expands

WESTERN PHOSPHATES, INC., Garfield, Utah, a joint affiliate of Stauffer Chemical Co. and Garfield Chemical and Manufacturing Co., has outlined a plant expansion program which will diversify operations and products.

The chief current feature is the addition of nitrates to its line of phosphatic fertilizer products. Within two years the company will be equipped to add potassium to the fertilizer blends.

Ammonium phosphate production is being increased from 10,000 to 70,000 tons anually. An ammonium phosphate containing gypsum, essential to many of the alkaline soils of the West, has been added to the company's line.

Western Phosphates has recently increased its production of treble superphosphates from 60,000 to 90,000 tons per year.

Maryland Cement Plant

ALPHA PORTLAND CEMENT CO., Easton, Penn., has announced plans to proceed with the construction of a new 2,000,000-bbl. cement plant at Lime Kiln, Md. The plant will be located on property purchased by the company last February on the main freight line of the Baltimore and Ohio Railroad.

The plant operation will include dust collecting equipment and the latest safety devices. Two 11- x 400-ft. rotary kilns will be installed, with additional space for two more when expansion is required. MacDonald Engineering Co., Chicago, Ill., is the general contracting firm, and major equipment is being supplied by Allis-Chalmers Co., Milwaukee, Wis.

The new plant will be Alpha's ninth. With improvements underway at several plants and the addition of the plant at Lime Kiln, Alpha expects its productive capacity to be approximately 15,000,000 bbl. by 1958.

Mining Conference

THE NORTHEASTERN MINING BRANCH CONFERENCE will take place at Hershey, Penn., November 8-10, with the Lehigh Valley Section, American Institute of Mining, Metallurgical and Petroleum Engineers as host. Sessions will be held in Hotel Hershey. Three field trips have been planned. W. B. Stephenson is general chairman of the conference; D. S. Lyons is chairman of Lehigh Valley Section.

Increase Barite Supply

AMERICAN COLLOID CO., Chicago, Ill., is constructing a dam and plant for mining barite in the Muddy Fork area near Nashville, Ark. A 200-acre lake to provide water for mining barite will adjoin the plant. The barite is to be used primarily in the manufacture of an oil well drilling mud.

New Alabama Corporation Plans Magnesium Plant

ALABAMA METALLURGICAL CORP., recently formed jointly by Brooks and Perkins, Inc., Detroit, Mich., and Dominion Magnesium, Ltd., of Toronto, Canada, announced plans to construct a $7 million-plus magnesium plant at Selma, Ala.

Magnesium will be produced by the ferrosilicon reduction process from dolomite rock found near Montevallo, Ala. The process is based on the use of silicon as a reducing agent, reacted in the form of ferrosilicon with magnesium oxide obtained from burnt dolomite rock. A ferrosilicon plant will be built adjacent to the magnesium plant. The latter, which will have an annual rated capacity of 10,000 tons, is expected to be in operation before the end of 1957.

President of the new company is Lester G. White, former managing director of Dominion Magnesium. E. Howard Perkins is chairman of the board of Alabama Metallurgical and president and chairman of the board of Brooks and Perkins.

Gypsum Plant Completed

NATIONAL GYPSUM CO., Buffalo, N. Y., has completed its plant at Burlington, N. J. The quarter-mile-long plant is expected to produce enough gypsum building products for 50,000 homes a year.

The M/V Melvin H. Baker, a new 16,500-ton gypsum ore carrier named for the founder and present board chairman of National Gypsum, will transport directly to the plant from the company's mining development in Nova Scotia. Formerly, cargoes of gypsum have been unloaded at Camden and trucked to the plant site.

Install Third Kiln

GENERAL PORTLAND CEMENT CO., Chicago, Ill., announced that Trinity Division has installed a third kiln at the Fort Worth, Texas, plant. The kiln is expected to increase the plant's production by more than 50 percent. Total annual capacity, presently 2,000,000 bbl., will become 3,250,000 bbl. Additional grinding equipment also has been installed.

(Continued on page 39)



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Australia Subsidizes Asbestos Industry

THE AUSTRALIAN GOVERNMENT (both the Commonwealth and West Australian governments) is subsidizing the asbestos industry in the Wittenoom Gorge project. Mines there are owned by the Colonial Sugar Refining Co. The subsidies will amount to $12.50 per ton, with a limit set at 6000 tons. Production beyond that figure will be without benefit of subsidies.

The mines produce a long-fibered blue asbestos, which has not had a home market because of competition from low-priced asbestos from Canada and South Africa. It is produced chiefly for the export market, with the United States and Canada being the principal buyers.

Some 12,000 tons of fiber may be exported next year, selling for about $225 per ton. The new subsidies, plus a recently signed contract with Johns Manville Corp., will give impetus to the industry.

Opens New Plants

INTERNATIONAL MINERALS AND CHEMICAL CORP., Chicago, Ill., has started up three new plants in the company's Industrial Minerals Division, according to Louis Ware, president. These are a mica beneficiation plant at Greeneville, Tenn.; a perlite grinding unit at Los Angeles, Calif.; and a mine and plant at Blue Mountain, Ontario, producing nepheline syenite, which is used in the manufacture of glass.

The Greeneville plant, said Mr. Ware, is using as raw material a mica-containing silt which has accumulated since 1910 behind one of the TVA dams. The half-million dollar plant has a capacity of 64 tons per day. The perlite unit in Los Angeles is serving the specialty markets — paint, paper, filteraid and filler.

Machine Developed For Phosphate Rock Mining

U. S. BUREAU OF MINES has released information on a new type of continuous mining machine that promises to reduce operating costs of underground phosphate rock mines in the West. The machine, called a "planer," was designed and built at the Bureau's field office in Spokane, Wash.

A copy of Report No. 5219, "Design and Development of a Pneumatic Vibrating-Blade Planer for Mining Phosphate Rock: A Progress Report," can be obtained from the Bureau of Mines, Publications-Distribution Section, 4800 Forbes St., Pittsburgh 13, Penn.



Architectural drawing of The Celotex Corp.'s gypsum products plant being built at Fort Dodge, Iowa

Celotex Breaks Ground For New Gypsum Plant

THE CELOTEX CORP., Chicago, Ill., has begun construction of a new $5 million gypsum products plant near Fort Dodge, Iowa. Groundbreaking ceremonies were held recently.

The present plant at Fort Dodge will not be used after completion of the new factory there. The buildings are to cover an area of about 175,000 sq. ft. Greatly enlarged production will be effected by the new plant, scheduled for completion in late 1957.

Celotex has two other plants, one at Hamlin, Texas, and another at Port Clinton, Ohio, manufacturing its line of Celo-Rok gypsum products, lath, plaster, wallboard, and sheathing.

Stone Lost in Slide

PEERLESS CEMENT CO., Detroit, Mich., lost 15,000 tons of limestone which slid into the River Rouge at the company's dock recently. The slide took with it temporary buildings and equipment of five construction companies working on a new Peerless building. A load of limestone was being stockpiled from a self-unloading freighter when the slide occurred. The weight of the material being unloaded, plus the pull on lines holding the vessel to the shore, is believed responsible for the slide, which took with it a section of shore 200 yd. long and 100 yd. wide.

Inaugurate Brazil Plant

CIMENTO CAUE' PLANT, Belo Horizonte, Brazil, was recently inaugurated with Brazilian president, Dr. Juscelino Kubitschek de Oliverira and Dr. Jose Francisco Bias Fortes, governor of the state of Minas Gerais, taking part. Col. Juventino Dias is the owner of the new plant, a wet process cement mill which will produce 300 metric tons per day. Plans already are underway for plant expansion.

Allis-Chalmers Manufacturing Co., Milwaukee, Wis., which supplied equipment for the mill, was represented at the inaugural ceremony by Erling Winsnes, former manager of the company's South American sales, and Lewis Fry, factory representative at Sao Paulo, Brazil.

Stone Company Sold

HIALEAH CRUSHED STONE CO., Miami, Fla., has been purchased by Arthur Vining Davis through Three Bays Improvement Co., a Davis holding company. The crushed stone company, operated by F. G. Murphy and E. B. Mills, will be dissolved in name.

Also purchased by Mr. Davis was C. T. Stockton, Inc., a road building firm. Included in the joint sale was a 100-acre rock quarry west of Miami International Airport. The vice-president and treasurer of Three Bays, Kenneth Ferry, Jr., will head operations of the two new Davis holdings.

Peruvian Plant Underway

A NEW PERUVIAN CEMENT PLANT is under construction at Pacasmayo, 420 miles north of Lima. Work has been proceeding on the main building and a kiln, and by January, 1957, machinery installation will begin. The plant will have an expected production of about 2000 bbl. per day.

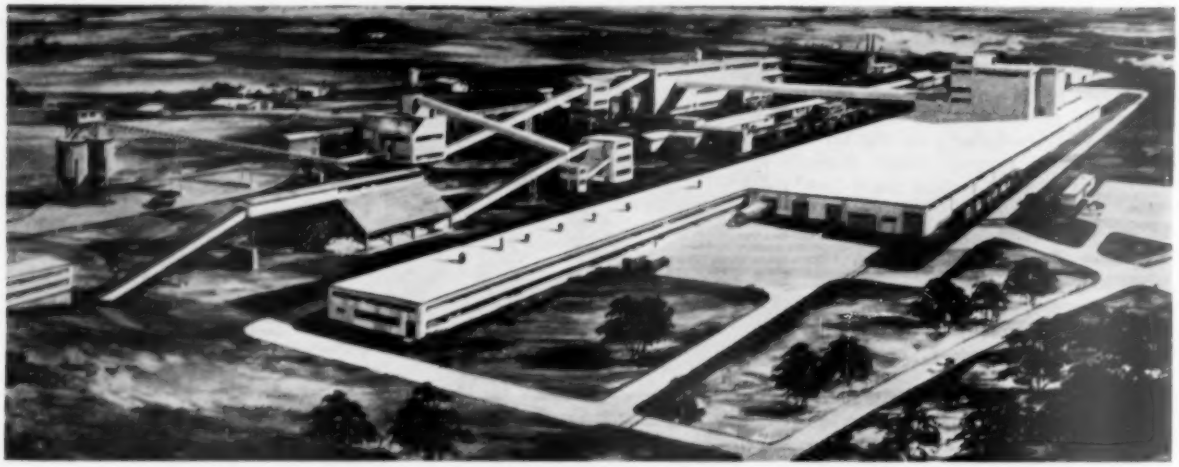
Mineral Search

BEAR CREEK MINING CO., Morristown, N. J., has set up an exploratory operation near Palatka, Fla., for silica, monazite, and other minerals. Bryant D. Walker, chief of the exploratory operation, said that the firm has not scheduled mining operations, and no land has been purchased or leased.

Converting Mine For Storage

SOUTHWEST LIME CO., Neosho, Mo., is constructing a 500,000-sq. ft. underground storage plant in its limestone mine near Neosho. The space will be

(Continued on page 41)



Barber-Greene installation at new Celotex plant. Ten of the eleven conveyors are housed. Building at far left houses primary crushers. At right is wallboard plant. Mill is in background.





(Left). Material rejected by the separator is carried to two storage bins by this 329-foot Barber-Greene conveyor. Standard 60-inch truss minimizes the number of supports required. (Right). A 422-foot conveyor in gallery utilizes traveling tripper to build long stockpiles.

1600′ conveyor system serves new Celotex plant

Eleven Barber-Greene conveyors are incorporated in the design of a new plant of the Celotex Corporation.

The 1600-foot conveyor system handles every product from the raw, heavy gypsum rock to the fine finished plaster. This processing requires a wide variety of types and sizes of conveyors—all coordinated to deliver continuous high capacity at lowest operating cost.

Built with *standardized* components, these versatile conveyors are delivered faster, go up easier and require less costly engineering time.

These pre-engineered components can be used in almost limitless combinations, from the most complex systems right down to the small setups requiring a single conveyor. When it comes to adapting Barber-Greene conveyors to meet changing needs, standardized components make the job easier, faster and more economical.

Write for literature on the conveyors pre-engineered to cut costs

56-23-PE



Barber-Greene BG

AURORA, ILLINOIS, U.S.A.

CONVEYORS . . . LOADERS . . . DITCHERS . . . ASPHALT PAVING EQUIPMENT

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operated by Ozark Terminal, Inc., of which Russell Hunt, president of the lime company, is chairman of the board. President of the new company is M. M. Bowman, who is also president of the Fairfax Storage Co. of Kansas City, Mo.

Highway Highlights

● NEARING THE PLANNING STAGE is Florida's first traffic tunnel. The four-lane, 900-ft. tunnel will extend under the New River on U. S. Highway 1 at Ft. Lauderdale. With a cost estimated between $4- and $5 million, the project will be financed by state and federal funds on a 50-50 basis. The city of Ft. Lauderdale will provide rights of way for approaches.

● THREE-HUNDRED MILES OF NEW ROADS in the state of Vermont would be provided by a $25 million bond issue and 2½¢ gasoline tax increase recommended by Governor Johnson. About two-thirds of the total would go into throughway construction which will be financed largely by federal funds.

Christen Cement Carrier

HURON PORTLAND CEMENT CO., Detroit, Mich., christened its latest self-unloading cement carrier, Steamer E. M. Ford, on July 24, 1956. It was named for the chairman of the board of Huron.

The ship, constructed in 1898, was formerly the Presque Isle, a bulk ore carrier, owned by Cleveland Cliffs Steamship Co. It was sold to Huron in 1955 and has been reconstructed throughout for its new service.

Safety Award

MATERIAL SERVICE CORP., Chicago Ill., has been notified by U. S. Department of the Interior, Bureau of Mines, that its Lockport, Ill., plant has won highest honors in the Pit group of the 1955 National Sand and Gravel Safety Competition. The recognition was made for its record of no lost-time injuries to any employee during a total worktime of 171,617 man-hours at the plant during the year.

Pavement Yardage

AWARDS OF CONCRETE PAVEMENT for the month of July, 1956, and total awards for the first 7 months of 1956 were listed by the Portland Cement Association as follows:

	Sq. yd. awarded during	
	July, 1956	First 7 Mos.
Roads	1,892,639	26,028,977
Streets and alleys	2,498,715	19,908,651
Airports	408,356	6,365,718
Total	4,794,710	52,303,246

Aggregate Plant Expands

AMERICAN AGGREGATE CO., an associate of The Featherlite Corp., Dallas, Texas, has announced plans to expand its plant at Ranger, Texas, from four to nine kilns, more than doubling its output of lightweight aggregate. The 6- x 85-ft. kilns are being supplied by Standard Tool and Machine Co., Longview, Texas.

Coming Conventions

September 17-21, 1956—
American Society for Testing Materials, 2nd Pacific Area National Meeting, Statler Hotel, Los Angeles, Calif.

October 1-4, 1956—
American Mining Congress, Metal Mining and Industrial Minerals Convention, Shrine Exposition Hall, Los Angeles, Calif.

October 10-12, 1956—
National Lime Association, Operating Meeting, Kentwood Arms, Springfield, Mo.

October 17-19, 1956—
National Industrial Sand Association, Fall Meeting, The Greenbrier, White Sulphur Springs, W. Va.

October 22-26, 1956—
National Safety Congress and Exposition, Conrad Hilton, Congress, Morrison and LaSalle Hotels, Chicago, Ill.

October 24-25, 1956—
American Concrete Institute, 9th Annual Meeting, Sheraton-Mount Royal Hotel, Montreal, Canada.

November 12-19, 1956—
American Concrete Pressure Pipe Association, 8th Annual Convention, Castle Harbour Hotel, Tucker's Town, Bermuda.

January 15-17, 1957—
National Crushed Stone Association, 40th Annual Convention, American Hotel, Miami Beach, Fla.

January 22-23, 1957—
National Agricultural Limestone Institute, 12th Annual Convention, Statler Hotel, Washington, D. C.

January 23, 1957—
National Crushed Limestone Institute, Annual Convention, Statler Hotel, Washington, D. C.

January 28-February 2, 1957—
American Road Builders' Association, Convention and Road Show, National Amphitheater, Chicago, Ill.

February 11-14, 1957—
National Sand and Gravel Association, 41st Annual Convention, Statler Hotel, Los Angeles, Calif.

February 11-14, 1957—
National Ready Mixed Concrete Association, 27th Annual Convention, Statler Hotel, Los Angeles, Calif.

February 25-28, 1957—
National Concrete Masonry Association, Annual Meeting and Exposition, Hotel Jefferson, St. Louis, Mo. Exhibit at Kiel Auditorium.

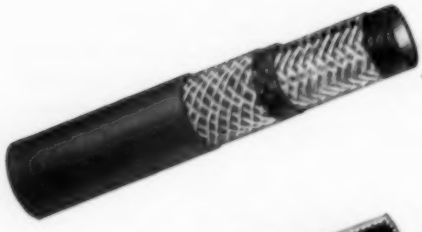
For long, trouble-free service . . . use Quaker hose



AIR Extra lightweight, highly flexible hose for heavy duty work. Resists weather damage and abrasion. Non-porous tube of oil resistant rubber compound. Rugged Neoprene cover. Ideal for almost any hose installation.



FIRE Resilient, flat-folding hose saves space and gives long service in interior fire protection. Highly flexible and resistant to cracking. Leak-proof tube bonded to strong single jacket cover. Recommended for institutions, offices, ships, etc.



STEAM Many times stronger than wrapped fabric hose for general steam-handling jobs. Also lighter, more flexible and kinkproof for easier handling. Steel wire and glass reinforcing insures extra safety. Resists high pressures up to 388° F.



WELDING No twisted, tangled lines. Two lines are securely bonded together to form a single, safe hose unit. Kink-free and resistant to welding gases. Stands up to lots of dragging across rough surfaces. Especially effective on portable welding dollies.



WATER For long wear and outstanding value, this easy-to-handle hose has what you need. Reinforced with multiple plies of high tensile yarn, it takes higher than usual working pressures. Cover stands up to weather extremes without cracking or peeling.

Save time and money. Call your Quaker-Quaker Pioneer distributor first, *when you need hose or other industrial rubber products. You'll find him prompt, dependable.*

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HINTS AND HELPS

PROFIT-MAKING IDEAS DEVELOPED BY OPERATING MEN

Portable Light Plant

TO SUPPLY LIGHTING for a "coyote" tunnel at a western limestone mining operation, a portable lighting plant on a trailer was used. If desired, the assembly of power and generator units can be skidded off the trailer for permanent mounting or repairs. The rubber-tired trailer can be quickly moved to any new location.



Lighting plant on trailer can be moved quickly to any desired location

Bumper Protects Crusher

AT THE OPERATION shown in the illustration, trucks rear-dump to the hopper ahead of the large primary jaw crusher. To protect the frame above the swinging jaw, the bumper was installed as shown.

Over the crusher installation is a crane for handling repair parts to the crusher. This crane is also convenient to place the bumper.



Bumper which protects frame above the swinging jaw of the crusher



Liquid cyclone, sand screw and settling box in the finish section circuit

Sand Recovery

METHODS OF SAND MANUFACTURE and sand recovery followed by California Rock & Gravel Co. at its Eliot plant have been pioneered by this company and have set a pattern followed by many other producers.

J. S. Silva, plant manager, was one of the first to use a hammer mill to manufacture sand. Later a Marcy rod mill was used for this purpose, and the most recent addition is the 54-in. Nordberg Gyrodisc crusher to augment the rod mill production. Two vertical Nordberg gyratory action screens help dewater the materials fed to the Gyrodisc crusher.

Like all the deposits in this area, the Eliot plant has clay to contend with. One of the first steps in removing clay is the use of a rotary-screen scrubber followed by dewatering in a 78-in. Wemco sand screw. Formerly, the overflow from the sand screw went to a company-made drag. Recently, a 25-in. Duraclone, supplied by H. B. Large Engineering Co., was installed to replace the drag. The overflow from the screw now goes to a 5-in. Wemco sand pump and the pulp is delivered to the liquid cyclone (Duraclone). This unit recovers roughly 7 t.p.h. of minus 30-mesh sand that is returned to the washed gravel belt conveyor for delivery to the main plant.

In the mill classifier and crushing circuits, there are two 48-in. screws and a 60-in. unit, all Wemco equipment. Overflow from the screws flows to a collector box that is 6- x 10-ft. in area and 7 ft. high. Considerable turbulence is present in this collector. Sand that settles in this box is picked up by one of two Kansas Hay Press rubber-lined pumps for delivery to one of two additional Duraclones. The liquid cyclone on the mill circuit has a 5-in. intake and a 6-in. overflow and uses a 30-hp. motor. This unit recovers about 2 t.p.h. of minus 50 mesh sand, containing some 200-mesh with a trace of 30-mesh material sometimes showing.



Close-up of 25-in. liquid cyclone in the primary section of plant

(Continued on page 45)



INDUSTRIAL SCREENS

for accurate, low-cost screening

You can get a CF&I Industrial Screen that has exactly the right combination of features to assure fast, accurate, low-cost service in your screening operation. That's because CF&I Screens are available in standard and special weaves . . . and can be supplied in a wide variety of carbon and alloy steels, as well as in non-ferrous metals.

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SPACE SCREENS

THE COLORADO FUEL AND IRON CORPORATION

3676

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Wichita • WICKWIRE SPENCER STEEL DIVISION: Atlanta • Boston • Buffalo • Chicago • Detroit • New Orleans • New York • Philadelphia
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On the crushing circuit, a 25-in. Duraclone is used. This unit has a 4-in. intake and a 5-in. overflow and uses a 25-hp. motor. It recovers 1¾ t.p.h. of minus 80 to 200-mesh sand. Sand recovered from these two units blends back continuously into the current sand production. Addition of the finer sand has improved the workability and gradation of the commercial sand to a considerable extent.

At the time when this installation was inspected, two of the liquid cyclones had been in operation about a month and the liquid cyclone at the primary section had just started. The Duraclones are rubber-lined. Water seals are used on the Hay Press pumps. The capital investment per ton of sand recovered was said to be reasonably low.

Removing Water from Compressed Air

REMOVAL OF WATER from compressed air usually can be done by abruptly reversing the direction of air

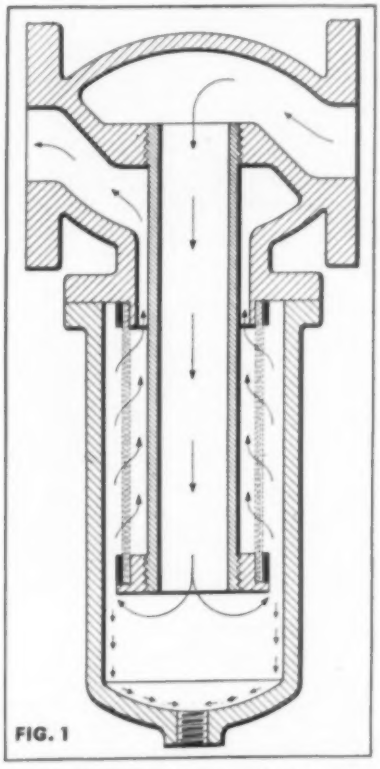


Fig. 1: Changing direction of air by the use of globe body valve removes water

travel or by centrifugal action, or a combination of both. One idea used abroad is to change the direction of the air stream by the use of a globe body valve as shown in Fig. 1. A welded type unit for reversing the direction of the air stream is shown in Fig. 2.

In both types of separator, a trap that automatically discharges accumulated oil-water sludges is an advantage. Fig. 3 shows one type of trap that can be made in the company's shop. Fig. 4 shows a centrifugal type separator that has been successful.

After observing the numerous liquid cyclones in use in the rock products industries for fine sand separation

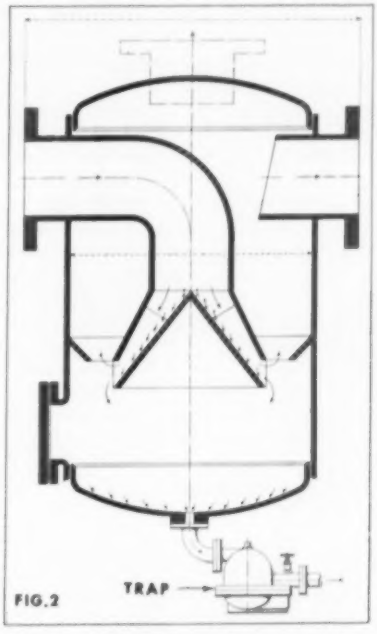


Fig. 2: Welded type unit for reversing direction of air stream

from liquid pulps, this type separator might well be used for air lines. Liquid cyclones, rubber-lined and in diameters as small as 3 in., have a very intense centrifugal action, and the droplets of oil and/or water in the air stream would be thrown to the walls of the

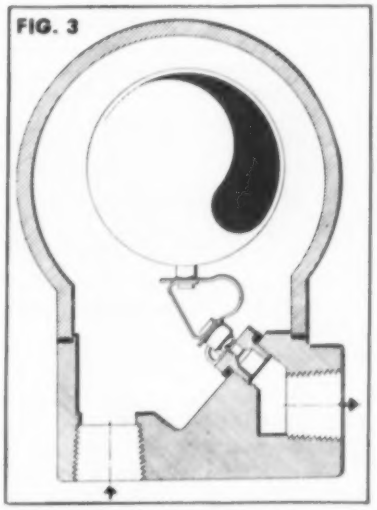


Fig. 3: Type of trap which can be easily made in any company shop

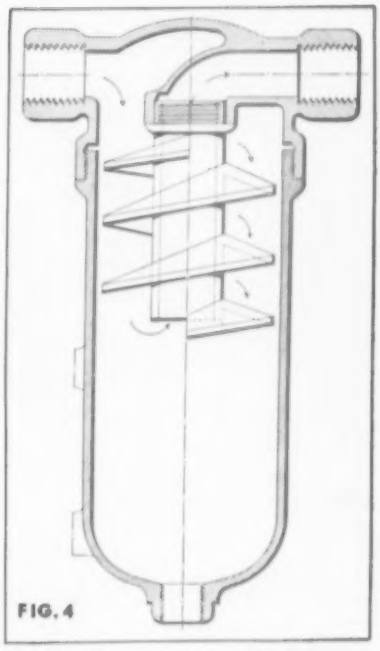


Fig. 4: Centrifugal type separator

cyclone with the sludge caught in the trap at the lower apex of the centrifugal separator.

Feeding Large Stone

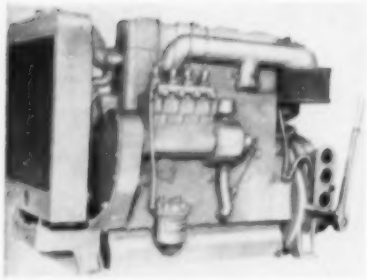
A SERIOUS PROBLEM often develops when feeding flux stone or other large size material to a belt conveyor. Spillage and wear on the belt can be excessive. One producer of flux stone for the steel industry feeds a washed 3⅞ by 8½-in. stone to a 30-in. belt conveyor at the rate of 200 t.p.h., using a 36- x 60-in. Jeffrey-Traylor



Vibrating feeder with chains to prevent flooding handles large flux stone

vibrating feeder. Chains in the throat of the gate help to prevent flooding. The stone is delivered to ground storage stockpile under which is a reclaiming belt conveyor. Stone from this stockpile is reclaimed with the aid of a similar vibrating feeder. In this case, however, the reclaiming belt conveyor is a 36 in. unit with a capacity of 525 t.p.h.

NEW MACHINERY



Compact Diesel Engine

R. H. Sheppard Co., Inc., Hanover, Penn., announces Model 19, a 4-cylinder diesel of 153.6-cu. in. displacement, rated at 42 gross b.h.p. at 2000 r.p.m. The unit occupies less space than gasoline engines of comparable ratings, and is intended primarily as replacement power where service conditions are too rugged for gasoline engines. It can be installed without alterations to driven machines. It is available as a fan to flywheel engine, as an open power unit, standard power unit or closed power unit. It is also offered as a 10, 12 or 15 kw. generating set.

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Clamshell Bucket

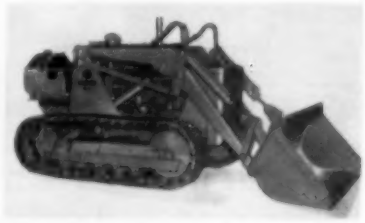
Erie Strayer Co., Erie, Penn., announces an addition to its line of clamshell buckets—a ⅜-yd. extra light rehandler. Model XLR-38 is made especially for 6- to 12-ton equipment, and has the design and construction features of larger models. It can be had with or without teeth and counterweights.

Enter 201 on Reader Card

Washing, Screening Plant

Pioneer Engineering Works, Inc., Minneapolis 13, Minn., has announced a new stationary washing and screening plant—Model 365W—designed for production of up to 100 t.p.h. of washed sand and gravel. The new model can be equipped to turn out four sizes plus oversize of washed gravel and one size of washed sand simultaneously. It can be adapted to varying product size requirements and, even though stationary, it is engineered to facilitate being moved from one pit or project to another. Water consumption runs from 500 to 750 gal. per min. All units are driven by individual electric motors except the 24G feeder, which is chain-driven from the feeder conveyor tailshaft. Approximate weight of the standard plant is 77,000 lb.

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Tractor Shovel Attachment

Ulrich Manufacturing Co., Roanoke, Ill., has introduced a tractor shovel for long track Caterpillar D2 tractors. Designated the No. 2 tractor shovel, it features long, non-oscillating tracks, built specifically for shovel work, and is powered by the Caterpillar No. 44 hydraulic control. The bucket has a 35 deg. tip back at ground level, a dumping height of over 10 ft., dumping reach of almost 3 ft., and a discharge angle of 80 deg. The lifting arms are heavy box sections, cross braced for rigidity, and the bearing surfaces and pivot points are equipped with replaceable bushings.

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Stepless Crane Control

Harnischfeger Corp., Milwaukee 46, Wisc., has developed Electronic Stepless Control, which, applied in conjunction with the standard P&H Magnetorque, provides an infinite number of speed variations, on all motions, for overhead electric traveling cranes. The control makes possible precision spotting in both lowering and hoisting directions and stabilizes hoisting and lowering speed, resulting in an almost flat speed-torque curve. The new control also provides complete plugging protection so that motors may be reversed from the "full" position in one direction to the "full" position in the opposite direction, without danger of damage. Using gas-filled tubes in the control circuit, the new control scheme reduces the number of mechanical contactors and eliminates the major source of maintenance usually required in crane electrical equipment.

Enter 204 on Reader Card



Cable Elevator

Hapman Conveyors, Inc., Kalamazoo, Mich., announces its new "Hi-Lift Cableveyor-Elevator" for elevation of free-flowing materials such as vermiculite, pumice, gravel, foundry sand, coal, chemicals, etc. It is available with 4-in., 8-in., or 12-in. dia. tubes. The unit consists of standard steel cable carrying concave stamped or cast metal buckets, uniformly spaced by heavy springs under compression. An elevator can be assembled to almost any practicable height. Either center discharge chute for low speed

Continued on page 49)





There's a Torcon unit to meet your job requirements

Here is a complete line of torque converters designed to meet a wide range of engine applications in all industrial fields.

The Clark Torcon unit is a three-element single stage converter of simple design, mass-produced. It is available off-the-shelf to owners and operators of equipment, as well as to manufacturers.

HORSEPOWER RANGE
. . . 15 to 600

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of options for easy fit into practically any torque transmission system.

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- **True Hydra-Foil Blade Design**
  —a patented feature. Correct combination of blade contour and angles assures smooth oil flow, for most efficient torque multiplication. **No cavitation** to cause turbulence or air pockets which impair efficiency and cause destructive wear.
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  —Sump is cast integral, and oil passages are cored in the housing. No unnecessary hoses and fittings; no external oil seals under pressure.
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  —Inspection plates are easy to get at; no special tools needed.
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  —no welds or fabrications to distort under extreme loads.

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A 6-yd. 150-B loads a hauling unit at a limestone quarry near Marblehead, Ohio.

IN OHIO . . . AND THE WORLD OVER

Profitable performance on toughest quarry jobs with Bucyrus-Erie Electric Shovels

From boom point to treads, a Bucyrus-Erie electric shovel is a *heavy-duty* excavator designed for sustained high output in toughest rock digging.

Its low maintenance features include an advanced-design front end that combines light weight with great strength, eliminates deadweight that slows operation and causes excessive wear on main machinery parts. A rigid boom with widespread boom feet easily carries extreme digging stresses.

Ward Leonard variable-voltage control results in high speed acceleration and deceleration, provides extra torque and power when it's needed most.

Follow the lead of many other successful quarry operators — put a Bucyrus-Erie electric shovel in your pit to keep costs down and output high.

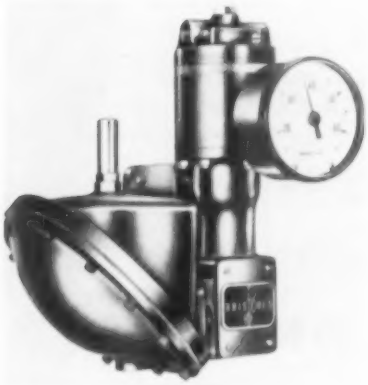
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BUCYRUS-ERIE COMPANY South Milwaukee, Wisconsin

of 60 f.p.m., or side discharge for high-speed operation up to 250 f.p.m., is available. A head with variable speed drive, shown at top in the illustration, is also available. The lower section of the photo shows the boot, designed for simple clean-out and take-up.

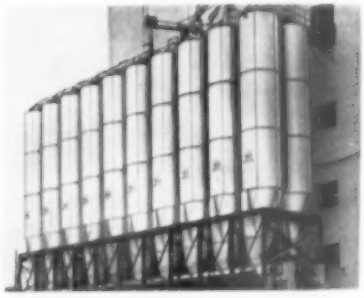
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Absolute Pressure Transmitter

THE BRISTOL CO., Waterbury 20, Conn., announces the Metagraphic Absolute Pressure Transmitter, which will measure pressures in ranges from 0- to 5-mm. Hg up to 0- to 760-mm. Hg. It transmits a universal 3-15 p.s.i. pneumatic signal, and can be used with any standard pneumatic receiver or automatic controller. A full line of such indicating and recording receivers and automatic controllers are also offered in the Metagraphic line.

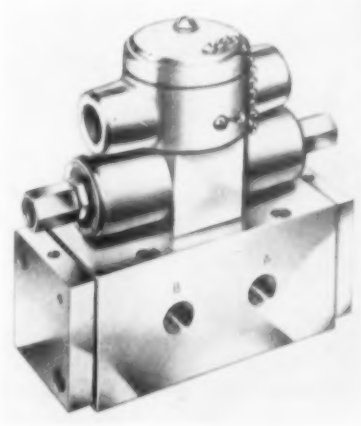
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Bulk Storage Bins

THE DAY CO., Minneapolis, Minn., is producing bulk storage bins in black iron, galvanized or stainless steel, which combine a scientific cone design and an anti-bridging device to provide maximum flow and minimum bridging. Patented cable suspension discs are located within the bins to aid material flow. The bins are built and shipped in sections, which are then bolted together. They may be unbolted and moved to new locations. Twin screw feeders, air lock rotary valves, rack and pinion gates or other discharge accessories are available for these bins.

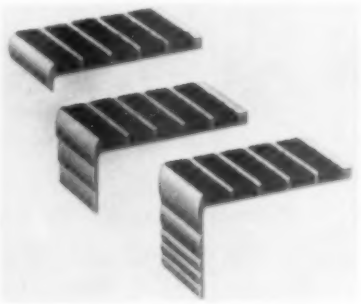
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Air Valves

HANNA ENGINEERING WORKS, Chicago, Ill., has developed a new series of solenoid and master air valves for use in three- and four-way air operation. They are available in sizes of ¼-in., ⅜-in., ½-in., ¾-in., and 1-in. Hanna Flo-Line valves are used for controlling air cylinders and other air-operated devices. The solenoid valves have a built-in junction box for piping of conduit.

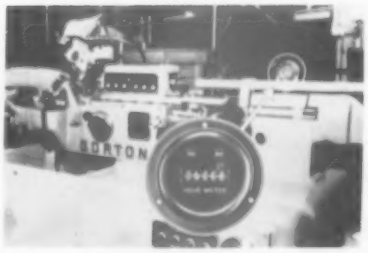
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Safety Stair Treads

WOOSTER PRODUCTS, INC., Wooster, Ohio, is introducing a new line of aluminum safety treads, trade-named "Super-Grit." Aluminum oxide is the abrasive metal providing its anti-slip qualities. Coming in two widths, 3- and 4-in., the safety treads are also available in three nosing styles, with nosing depths ranging from ¼-in. to 1¼-in. "Time-Saver" anchors, of the same non-corrosive, heat-treated aluminum as the base, are another feature of the treads. Super-Grit treads may be curved and mitred in lengths up to 12 ft.

Enter 209 on Reader Card



Timing Instruments

JOHN W. HOBBS CORP., Springfield, Ill., announces a complete line of alternating current meters for 120, 240 and 480 volts, 25, 50 and 60 cycles, available in 10,000- and 100,000-hour models. They are powered by a synchronous motor, registering total accumulated time on the odometer. Any equipment powered by alternating current can be equipped with these instruments. They are suggested for use on compressors, motor generating sets, pumps, automatic machines, power conveyors, lighting systems, and packaging machines.

Enter 210 on Reader Card



Wagon Drill

JOY MANUFACTURING CO., Oliver Bldg., Pittsburgh 22, Penn., has introduced a completely power-operated wagon drill. Called the Jr. Challenger, it is a self-propelled, track-mounted drill that mounts a 360-lb., 4½-in. drifter, drilling up to 3½-in. dia. holes to depths of 40 ft. All movements of feed and drill are performed hydraulically. Each tread derives tramming power from its own direct-connected air motor, and each adjusts independently to terrain, being locked by the turning of a valve. The Jr. Challenger drills at any angle.

Enter 211 on Reader Card

(Continued on page 51)

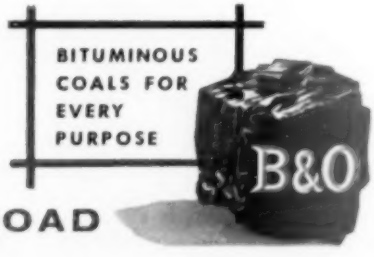


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Grate Assemblies

ALLIS-CHALMERS MANUFACTURING CO., Milwaukee, Wis., has introduced a new grate design for the feed end of its air-quenching clinker cooler. All feet end grates are "L" shaped, 2½- x 1-in. in size. They are staggered longitudinally to form a rigid heat resistant surface. The grates are held tight by long through-bolts, which expand and contract with the grates. The bolts are readily accessible from outside the cooler to permit easy and rapid cinching up when required. Existing air-quenching coolers may be converted to accommodate the new style grates.

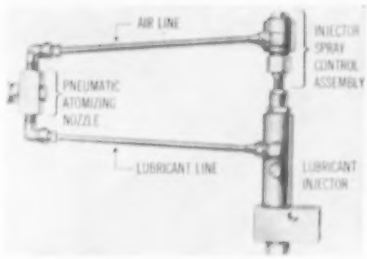
Enter 212 on Reader Card



Material Handling Bucket

BUCYRUS-ERIE CO., South Milwaukee, Wis., has brought out a ¾-cu. yd. clamshell-type material handling bucket, for use with the truck-mounted, hydraulic H-5 Hydrocrane. Foot-controlled selector valves are incorporated to permit the operator to channel the machine's available horsepower into the digging action. Two double acting hydraulic rams force the bucket bowls closed so that the usual hoisting action required to close cable-operated buckets, is eliminated. This is said to provide better penetration and greater payloads because the bucket digs in with its full weight. The lower ends of the rams are attached directly to the upper edge of the bowl sections, and do not extend into the bucket so there is no load interference. Use of twin rams provides added force to the lips at the point of closing. The bowls are interchangeable with those of the ½-cu. yd. digging bucket.

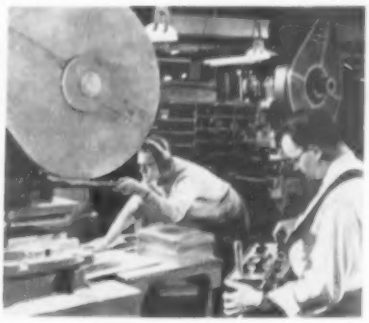
Enter 213 on Reader Card



Lubrication Spray Control

LINCOLN ENGINEERING CO., Industrial Div., 5702-46 Natural Bridge Ave., St. Louis 20, Mo., has introduced the MistOmatic Spray Control for automatically applying a controlled, pre-measured quantity of mist lubrication on open gears, chains, cams, rollers, eccentrics, slides and ways, circular saws, etc. It was designed for use with the company's power-operated, time-clock controlled centralized lubrication systems which, in combination, permits automatic, simultaneous lubrication of both closed bearings and open surfaces at pre-set time intervals.

Enter 214 on Reader Card



Noise Meter, Analyzer

MINE SAFETY APPLIANCES CO., Pittsburgh, Penn., has developed the Soundscope, a precision sound level meter and analyzer. It combines the functions of a sound level meter, octave band analyzer and narrow band analyzer in a compact portable unit, with self-contained power supply and integral calibration (electrical and acoustical). The 20-lb. instrument is 16- x 7¾- x 7-in., and is enclosed in a wood and aluminum case. Measurement range is from 24 to 150 decibels. The press operator in the illustration is wearing M-S-A Noisefoes.

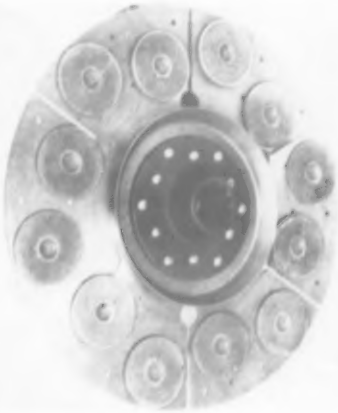
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Bulldozer Tilting Attachment

CATERPILLAR TRACTOR CO., Peoria, Ill., has announced a hydraulically actuated bulldozer tilting attachment for use with No. 9S and 8S bulldozers. It is designed to provide increased versatility on applications requiring frequent tilting of the blade. A large hydraulic cylinder replaces the left bulldozer blade brace, and with the right-hand brace adjusted to its neutral position, either corner of the 9S blade can be raised approximately 28 in. above ground level by retracting or extending the tilt cylinder. On the No. 8S, the blade can be raised about 24 in. Additional tilt can be obtained by extending or retracting the screw-type right-hand brace. The tilt cylinder is controlled from the operator's seat, and this hydraulic control may also be used to operate the No. 8 ripper. A double valve arrangement is available for combined operation of the No. 8 ripper and the No. 8S bulldozer.

Enter 216 on Reader Card



Ceramic Clutch Linings

LIPE-ROLLWAY CORP., Syracuse, N. Y., is manufacturing clutch plates employing ceramic-type linings for their line of heavy-duty clutches for off-highway vehicles. The ceramic friction material is compressed within shallow metal cups or "buttons," with

(Continued on page 51)

SECO SCORES ON PERFORMANCE FOR JEFFERSON COUNTY, OREGON



Photographed on-the-job Madras, Oregon

SCREENS APPROX. 100 TPH 3/4" ROADBED GRAVEL AT COMPACT, MODERN COUNTY OWNED MADRAS PLANT

The SECO type S vibrating screen shown directly above the bin in the above photograph is operated by the Jefferson County, Oregon Highway Department.

SECO'S time-proven, fully controlled true circular action is paying off here in a highly satisfactory way. Like all SECO'S, this one is a smooth performer. While it delivers high tonnages of accurately screened material, it does it smoothly and effortlessly without unduly shaking the supporting structure.

Whatever your own screening requirements, it will pay you in better results to turn to SECO.

SEND FOR CATALOG No. 204

SECO WITH ELECTRICALLY HEATED WIRE CLOTH OPENS NEW SCREENING POSSIBILITIES FOR DAMP, STICKY MATERIALS

If you have a material with high moisture content to be screened, this may be your answer. Write for complete information.

SECO

TRUE CIRCULAR ACTION

VIBRATING SCREENS

Go Modern with SECO SCREENS for Greater Profits

Seco welcomes the opportunity to help you do a better screening job. Plan now for years of more profitable screening whether it's fine ag-lime or coarse rip-rap.

SCREEN EQUIPMENT CO., Inc.
Buffalo 25, New York

Enter 1354 on Reader Card

six such buttons comprising the facing on each side of the plate for clutches up to 14-in., and 12 on each side for clutches 14-in. and over. The buttons are mounted back to back on either side of the clutch plate, with a single tubular rivet holding each pair in place. The manufacturers claim that the ceramic facings show very high resistance to wear and retain their original high-friction characteristics even under extreme heat conditions, making it possible for the lining to provide a load capacity up to 50 percent greater than that of the conventional facing. Heat generated is dissipated in the air spaces around the individual retaining cups, being conducted away from the friction surfaces and into metallic parts. It is further claimed that the linings wear as much as five times longer than conventional organic facings, reducing maintenance costs. The clutches with ceramic facings are suitable for use on heavy-duty off-highway vehicles and machines, such as tractors, trucks, earth movers, power shovels, bulldozers and cranes. They are also suitable for certain special applications in on the-road equipment.

Enter 217 on Reader Card



Shovel Crane

LINK-BELT SPEEDER CORP., Prudential Plaza, Chicago 1, Ill., has added the 3-cu. yd. Model K-608 to its line of shovel cranes. The crawler-mounted unit is convertible to shovel, crane, dragline, clamshell and piledriver attachments, and is designed for 3-cu. yd. shovel operation with a rated crane lifting capacity of 75 tons at a 12-ft. radius. It features Speed-o-Matic hydraulic control, and hydraulic-actuated steering clutches. Both the upper and lower frames are all-welded and stress-relieved for maximum strength and life under severe, shock-loading conditions. An independent, positive chain crowd offers two crowding speeds, and boom angle changes are permitted without chain adjustment. A rigid track drive assembly is designed to hold the chain sprocket and track drive sprocket in positive alignment at all times.

The unit has a ground clearance of 18 in. on the seven roller frame model and 24-in. on the nine roller frame type. Additional standard equipment includes hydraulic dipper trip; center pin trunnion to eliminate loading stresses on center pin; self-aligning, pivoted mounting for conical rotating rollers to keep the roller face in full contact with the roller path; free spooling operating drums, mounted on anti-friction bearings; and full-revolving fairleads. An optional independent rapid boomhoist is available for continuous booming with heavy loads. A high retractable gantry is available for operation with a long boom.

Enter 218 on Reader Card

Forklift Trucks

GERLINGER CARRIER CO., Dallas, Ore., has produced a new series of heavy-duty forklift trucks: M-24, M-26, M-28, and M-30, which lift 12, 13, 14, and 15 tons, respectively. They are gasoline driven, but diesel power is available. They are equipped with dual-tired, front-wheel drive, and have 2-wheel, caster-type, rear-axle steering for maneuverability on all terrain. In lifting rated loads, their speed is standardized at 50 f.p.m. to a height of 10 ft. Forks, standardized at 48 in., are variable in width from 0 to 100 in. All models have a 6 deg. forward and 10 deg. backward tilt. Overall lengths without forks are 229 in. Torque converters are available.

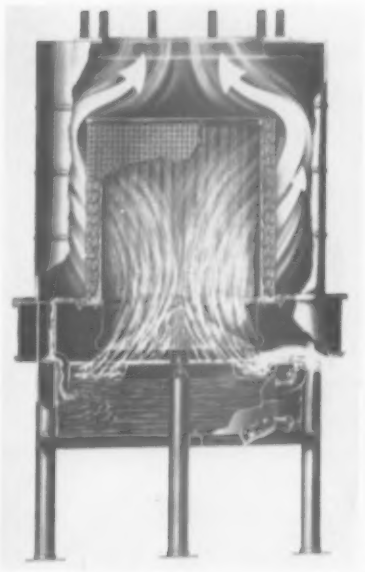
Enter 219 on Reader Card



Stabilization Pugmill

BARBER-GREENE CO., Aurora, Ill., has announced a high-capacity mixing pugmill designed for the needs of the stabilization mixing field. The twin-shaft pugmill has a 350-t.p.h. capacity. A 5-cu. yd. discharge hopper serves as a dam to control the height of the material in the pugmill and the duration of the mixing time. Designed for use with cement, calcium chloride, lime, and other water-mixed stabilizing agents, the Barber-Greene pugmill is equipped with water spray bars and meter-centrifugal pump combination that can supply as much as 150 g.p.m. to the pugmill.

Enter 220 on Reader Card



Oil Bath Air Filter

AIR-MAZE CORP., Cleveland, Ohio, announces its LPD oil bath air filter designed to achieve low-pressure-drop operation without any moving parts or any outside energy supply, thus permitting economical air bath filtration with a broader range of compressors, blowers and engines. The smallest of four models recommended for variable speed engines and compressors has a capacity range from 800 c.f.m. to 3500 c.f.m. with a pressure drop of 0.6 in. water gauge at the minimum and 4.8 at the maximum. The largest of the models for constant speed engines and compressors ranges in capacity from 16,500 c.f.m. to 24,000 c.f.m. with a pressure drop ranging from 1.9 in. to 3.5 in.

Enter 221 on Reader Card



Front End Loader

MIXERMOBILE MANUFACTURERS, Inc., Portland 20, Ore., is introducing Model LD5T Scoopmobile, a 1-cu. yd., 5000-lb. capacity front end loader. A new feature is its ability to transport a full load with the bucket raised off the ground merely enough to clear the terrain. This gives the operator unimpaired visibility while underway with a load. Four-wheel steering and 2-axle oscillation are other features of the model.

Enter 222 on Reader Card

Expanded Long Beach, Calif. plant. Enlarged plant requires 300,000 tons of gypsum annually



Spend $3 million at Long Beach, Calif., to lengthen board production line and increase drying and calcining capacity

KAISER GYPSUM CO., INC., has completed another part of a $22 million over-all company expansion that will boost total capacity of its four gypsum plants 80 percent—to more than 600 million sq. ft. of gypsum board and lath products, plus 85,000 tons plaster.

The recent $3 million enlargement — an expansion of Kaiser's Long Beach, Calif., installation — sets the plant's annual capacity at 210 million sq. ft. of 3/8-in. board products and 50,000 tons of



Alex McEachern, president, General Construction Co., Seattle, Wash., left, and **Victor Cole,** vice-president and assistant general manager, Permanente Cement Co.



Another Step Toward

Kaiser's 80% Boost In Gypsum

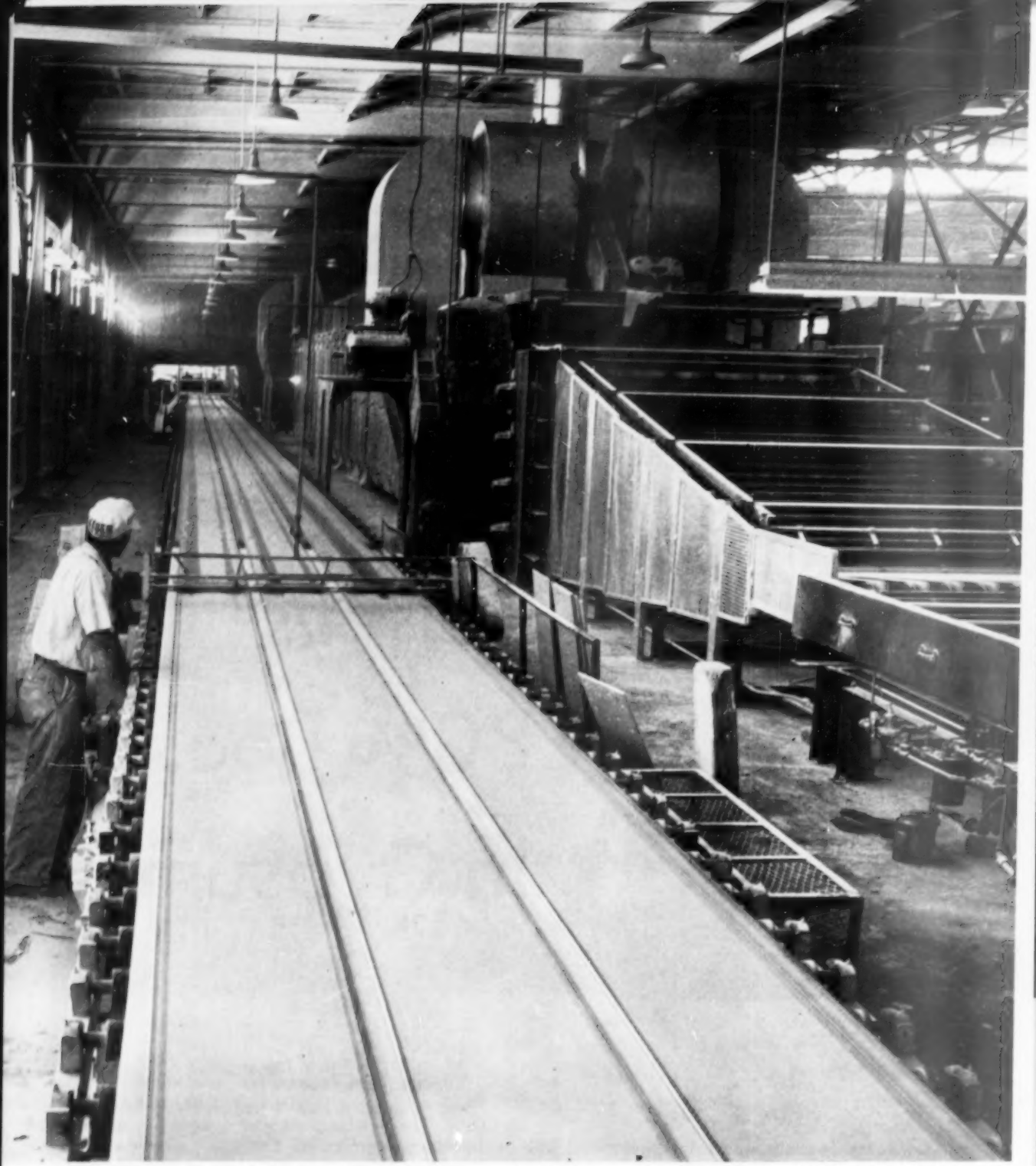
By WALTER B. LENHART

hardwall and special-type plasters. The plant will manufacture plain, perforated, and long-length gypsum lath; ¼-in. to ⅝-in. gypsum wallboard; plain and impregnated gypsum interior sheathing.

Kaiser Gypsum is a wholly owned subsidiary of Permanente Cement Co., which operates the second largest portland cement plant in the United States (capacity 8,500,000 bbl. per yr.), and the only cement manufacturer in North America producing a full line of gypsum products.

Kaiser's other plants are located in Seattle, Washington, (See RP, Dec. '54, p. 72) and Antioch, Calif. The Seattle plant was designed to produce 100,000 sq. ft. per yr. The first unit of Antioch plant has taken over the work of Kaiser's Redwood City, Calif., operation which was partially burned in 1955. With the completion of Antioch's second unit, capacities there will be almost as large as the combined Seattle and Long Beach plants.

Included in the Long Beach expansion was a 40 percent lengthening of the gypsum board production line, an increase in drying capacity and calcining facilities, modernization of all equip-



Wallboard conveyor on which the gypsum board material comes out of the forming rolls and is carried down 671-ft. processing line

ment, and construction of four additional buildings to add more than 108,000 sq. ft. of floor space.

The Long Beach plant has brought four innovations to the gypsum industry by using expanded perlite, installing a newer type Jeffrey-Traylor "Way-Trol" system, regrinding raw gypsum from the Raymond mills, and using a new method of controlling the board machine and the Coe dryer.

Expanded perlite is used to the extent of 3½ to 5 cu. ft. per 1000-sq. ft. of ½-in. wallboard. This duplicates somewhat the company practice at the Seattle plant, but at Long Beach the perlite is expanded in a 1-ton-per-hour gas-fired expander mounted on the second floor. A pneumatic system delivers the "popped" perlite to bins over the batching assembly. Sized perlite is secured from the Great Lakes Carbon Co. and is stored in a 70-ton storage bin after being mechanically unloaded. The furnace, which operates a few hours each day, was obtained from The Peralite Corp., Chester, Penn.

Perlite lightens the board and gives it added strength. To obtain the best results, a 4- x 22-ft. Marcy tube mill regrinds the stucco at the rate of 25 t.p.h. maximum (17 t.p.h. average) and reduces the material from 1700 Blaine to 2100. After this the tubed stucco is received by four 100-ton capacity storage bins, which supply a surge bin over the batching assembly.

A newer type Jeffrey-Traylor Way-Trol system weighs the dry ingredients ahead of the pin mixer accurately and continuously, and provides a chart record. The Way-Trol system is in use at the Seattle plant but the Long Beach installation appears to be a simpler, more accurate and effective manner of blending. The Way-Trol device is a small belt feeder that weighs and cuts off the material from three tube feeders, which are small screw conveyors of sufficient length and clearances to prevent flooding. Steel cylindrical bins, all fed from the supply floor, are mounted in a straight line over a screw conveyor that acts as a mixer-conveyor. One bin has been provided as a spare. Under each of the bins is a Way-Trol feeder. Before the dry mixture goes to the pin mixer at the board machine, a magnetic separator removes any tramp magnetic material. Wet reagents are mixed on the floor above the board machine and are fed at the pin machine by Omega Machine Co. wet feeders. The binder starch used in the core of the board is purchased.

Water, foam, solutions of potassium sulphate (used as an accelerator), solution of sodium hydroxide, resin, and other liquid reagents are delivered to the pin machine through feeders.

A novel feature of the operation is the regrinding of raw gypsum from the Raymond mills in a small hammermill, before the material is added as an accelerator in the board plant. The raw gypsum from the Raymonds is normally in the 85 percent minus 100-mesh range, and the hammermill reduces it all to minus 200 mesh and finer. By reducing the fineness in this manner, the amount of raw gypsum needed is cut in half, and the efficiency of the accelerator is increased.

A fourth innovation is the method of controlling and integrating the three belts used in the board machine with the cut-off knife, and the speed of movement of the green boards through the Coe dryer. The belt (57-in. wide) is in three sections, two on 126-ft. centers and one of 228-ft. for a total of 480-ft. These belts must all operate at exactly the speed of the board, and any changes in the adjustments of the belt speed must instantly be reflected in the Waytrol feeders. Controls here were developed by Century Electric Co., using direct current motors in combination with Selsyn motors. With this system the board on the forming belt, moving at the rate of approximately two m.p.h., can be cut continuously to pre-determined lengths at accuracies plus or minus $\frac{1}{32}$-in. (See flow diagram for details of the operation. The new plant additions are dark colored.)

Kaiser Engineers Division of Henry J. Kaiser Co. designed and constructed the 35,000-ton capacity rock storage building similar to the storage facilities at Kaiser's Seattle and Antioch plants. It is a nine-story, 16-sided steel and aluminum dome with no interior supports, which is used for storing raw gypsum under cover after it is unloaded from ships at the plant dock.

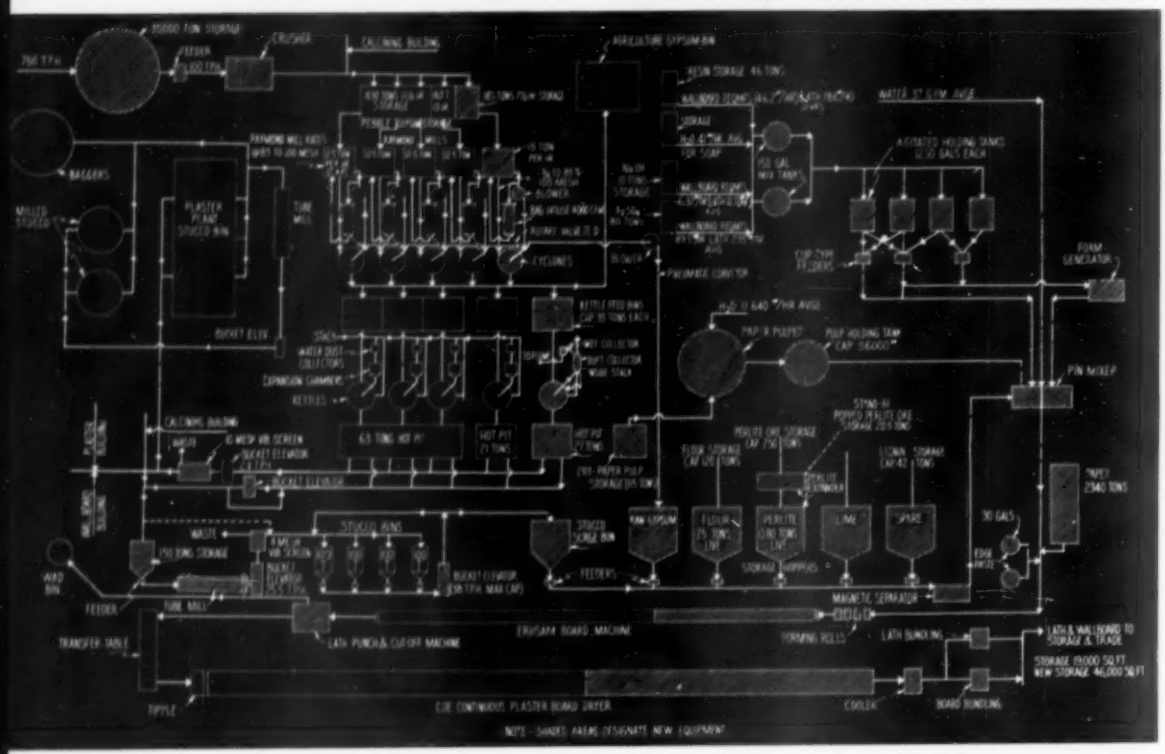
The plant will be supplied from a quarry at San Marcos Island, Lower California, which is operated by a wholly owned subsidiary, Compania Mexicana Occidental, S.A. The company has added extensive gypsum reserves near Gerlach, Yerington, and Las Vegas, Nev., to be used in case of emergency or any interruption of deliveries from the island.

Raw gypsum for this plant will be carried in the company's own ore vessels at a rate of 300,000 tons per year, or approximately a shipload every other week. The island has modern dock facilities, with deep water, capable of handling the largest ore-carrying vessels operating in the Pacific. Raw materials will be delivered by company-owned bulk ore carriers operated by a subsidiary, Gypsum Carrier, Inc.

San Marcos has the only commercial gypsum deposit on the West Coast available to low cost ship transportation. This deposit produces a high-purity ore (96 percent pure gypsum rock), permits economical open-pit mining because of little or no overburden, and is accessible to ocean-going vessels.

The raw ore, which is crushed to 4-in. minus size at the quarry before loading on the 10,000-ton S.S. HARRY LUNDEBERG, is delivered at Long

Flowsheet of expanded wallboard plant at Long Beach, Calif.



Beach from the vessel by boom conveyor into a shoreside hopper, from which it is transferred by conveyor belt to the covered stockpile building. The S.S. HARRY LUNDEBERG is a self-unloading ship. Belt conveyors in the hold of the craft deliver the minus 4-in. rock to a bucket elevator near the bow, where it is received by a boom conveyor that can be swung out over the dock and the material unloaded. On the high sea the boom conveyor is adequately fastened to the deck and is parallel to it.

The storage building is filled from the top and is tapped from below by concrete draw-down tunnel to conveyor belts. The belts feed the rock to an American Pulverizer Co. hammermill which reduces the rock to ¾-in. minus pebble gypsum at 100 t.p.h. Minus 4-in. rock in the storage pile is reclaimed to a belt conveyor operating in a concrete tunnel under the pile. A movable apron feeder is over the belt and can deliver rock to the belt from any of several openings in the roof of the tunnel. Near the discharge point of the belt to the hammermill is a stationary magnet to remove any scrap metal.

From the crusher, the pebble gypsum is elevated to the storage bins which feed five Raymond roller mills. A Bodinson tripper unloads the rock to the mill bins. The mills, equipped with air separators in closed circuit, grind the gypsum to a fine powder ready for calcining.

Calcining is done in Ehrsam kettles equipped with Foxboro recording pyrometers, using natural gas. The stucco is dumped into hot pits below the kettles and carried by screw conveyors and elevators to the stucco bins. The kettle stacks are equipped with company-made dust arrestors and dust control equipment, in which suction fans draw the dust through a water spray curtain.

In the production of hardwall plaster, stucco is transported by screw conveyor to a 5- x 22-ft. Marcy tube mill carrying a 4-ton charge of steel balls. The mill is driven by a 75-hp. Westinghouse motor and the fine stucco granules are reground. Tests have proven that regrinding produces the highest grade of plaster by improving working characteristics and increasing stability against aging.



Close-up of pulp from pin mixer just ahead of the forming rolls

Screw conveyors transport the product of the Marcy mill to feed bins located above three one-ton weight-batchers, where retarder and other ingredients are added before the batches are discharged to three Ehrsam paddle-type dry mixers. After mixing, the finished plaster is sacked in three-spout St. Regis valve-bag packers on the floor below. The 100-lb. filled bags are hand-trucked into the warehouse or directly to cars for shipment.

Stucco is taken directly from the hot pits below the calcining kettles for use in the gypsum board plant. The board plant is a steel frame structure covered with sheet metal. It has concrete floors and wall bases. It is approximately 744 ft. long to accommodate the board machine.

The supply rolls of special paper for backing and facing the lath or board unreel at the head end of the Ehrsam board machine; the slurry from the pin mixer being deposited on the bottom layer of moving paper first, as the paper is drawn under the mixer to begin its long run down the 671-ft.-long machine. Paper is currently being supplied by The Flintkote Company.

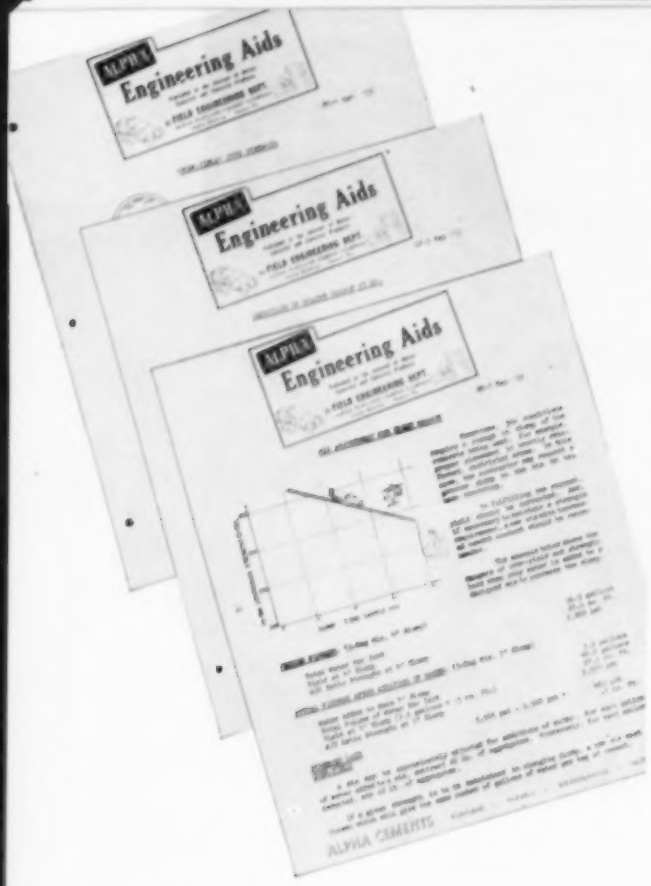
Leaving the belt, the board moves along on bronze rollers. If perforated lath is being made, the plaster-key holes are punched by an Ehrsam high-speed punch. A cut-off knife scores at 4, 8, and 12 ft. and severs lath at 16 ft. Sheathing is severed at 8 ft., and wallboard at 8 ft. or longer or shorter lengths as desired. After cutting, the sections move at accelerated speed to the end of the machine. Here a transfer table moves them across to the Coe dryer, which parallels the board machine.

The Coe dryer is made up of eight decks of live rolls, and the board is fed into these progressively by an automatic inclined roll conveyor or tipple. Since the dryer is twice as wide as the board machine and has eight decks, it keeps in step by moving the board at $\frac{1}{16}$th the speed at which it travels on the board machine.

The Coe dryer is 560 ft. long; the enclosed section of the dryer proper being 461 ft. long, made up of five zones. The board is dried by heat from steam coils in the enclosed section, and air is induced by a battery of fans. It requires approximately 71 min. for $\frac{3}{8}$-in. board to dry as it moves slowly toward the cooling end, traveling on ball-bearing rollers, of which there are approximately 8,000 in the dryer. Observation doors at intervals are made of Pyrex glass to withstand the heat.

As the finished board comes off the cooling section of the Coe dryer, it is bundled, loaded onto pallets, and moved by fork-lift trucks to the warehouse floor for storage, or directly into cars on the

(Continued on page 106)



Alpha Builds Good Through this Real

By JOSEPH N. BELL

A ONE-PAGE LOOSE-LEAF BULLETIN, mailed regularly to more than 1000 customers, is stirring up good will for Alpha Portland Cement Co., Easton, Penn. "ALPHA Engineering Aids" each month outlines and solves one problem of company customers in the ready mix and concrete products fields. The company began the series in 1955.

Simplicity is the keynote and real success secret of "ALPHA Engineering Aids", according to Norman O. Wagner, Alpha's vice-president for sales. A survey in June of last year revealed that "ALPHA Engineering Aids" had caught on quickly. Out of a 37.5 percent survey return, more than 99 percent wanted to continue receiving the bulletins, 87.5 percent were keeping an active file of them, and about 15 percent requested back issues.

Alpha's sales promotion and technical service departments created "ALPHA Engineering Aids." Although sales promotion, through the medium of good will building, is the main purpose of the monthly bulletin, the method used is a sincere effort to provide clear and simple technical aid on current problems. A. T. Hersey, director of technical service, develops the material and supplies the solutions to the pertinent problems as encountered in the field. This practical approach produces a service bulletin of maximum usefulness to cement customers.

When the bulletin was in its embryo stage, Mr. Wagner insisted that each leaflet be limited to one page, illustrated with line drawings or sketches, and that it deal with only one problem at a time as simply as possible. This, combined with the practicality of the problems and the technical accuracy and usefulness of the answers, has created much enthusiasm among Alpha customers for "Engineering Aids."

The bulletins deal with a wide variety of subjects, always in the direct line of interest of the customers receiving them. In order not to diffuse this interest, Alpha publishes two editions of "Engineering Aids"—one directed toward ready mix producers, and the other to products manufacturers. Subjects are always timely; for example, cold weather concreting is discussed during the season when this subject is foremost among the cement customer's daily problems. The bulletins are mailed out monthly to well over a thousand ready mix and concrete block producers who are checked periodically to insure a thoroughly correct and up-to-date mailing list. Alpha has distributed a plastic

Feeling

Service Aid



Left to right: J. M. Martino, sales promotion manager; N. O. Wagner, vice-president for sales; A. T. Hersey, director of technical services

binder for all customers receiving the bulletins.

Some of the subjects dealt with in the published bulletins include losses to the ready mix producer due to over-yield, methods of designing mixes for slump changes, the negligent effect of hot cement on the properties of concrete, proper steel trowel finishing techniques to eliminate dusting of concrete surfaces, danger signs in cold weather concreting and developments on control of shrinkage of concrete block through treatment with carbon dioxide gas.

Occasionally, Alpha attaches an appropriate publication enlarging on the topic covered in its "Aids" bulletin—as, for example, the Portland Cement Association leaflet on cold weather concreting and a publication of the Alpha Company called "Craftsmanship in Concrete." The latter—an illustrated eight-page folder on correct concreting techniques for avoiding dusting and crazing—generated so many requests that an additional 100,000 copies had to be printed.

"We had expected," said Mr. Wagner, "that those plants which have no engineers would find the "Engineering Aids" publication especially useful. We've been surprised and delighted to find that the larger plants, employing full-time engineers, have been equally enthusiastic about it."

The reception accorded "ALPHA Engineering Aids" proves the desire of most ready mix and concrete products producers for sound, simple engineering information on concrete. By tapping this nerve so effectively, Alpha is not only doing a useful service for its customers, but also is building a backlog of good feeling toward the company.

In This Plant

Rare Mineral Recovery Is the Main

Commercial Sand and Gravel Are Only

By WALTER B. LENHART

THE ACCENT IS ON RARE MINERAL RECOVERY at Marine Minerals, Inc., Aiken, S.C. Originally a sand and gravel producer with a secondary interest in minerals, this company has inverted its operations. Now rare industrial minerals are the main business—sand and gravel have become the by-products.

An affiliated company, Perry Minerals now handles the sand and gravel production. Owen H. Perry is the driving force behind both companies whose offices are at Aiken, S.C.

Company operations can be divided into three segments: (1) dredging, including processing on the dredge to produce a bulk concentrate that contains the five industrial minerals—at the same time, sand and gravel are moved to a shore plant; (2) separating and up-grading the industrial minerals in a dry plant; and (3) processing the sand and gravel at a shore based plant to clean and screen the aggregates to meet specifications.

The five industrial minerals produced are rutile, ilmenite, zircon, monazite, and staurolite. The first two are titanium minerals and are metallic in character. The last three mentioned are non-metallic in character. Monazite is a complex phosphate of the cerium minerals and, per pound, with rutile is one of the two most valuable minerals produced at the plant.

Dredging operations in South Carolina resemble some of the gold dredging operations in the West. The digging unit is a Yuba Manufacturing Co. dredge and was built by O. H. Perry for gold dredging operations on the Missouri River in Montana. After two years of gold mining, the dredge processed sand and gravel for the construction of the U. S. Reclamation Bureau's Canyon Ferry dam on the upper Missouri river close to where it had been recovering gold.

The infiltration of western mining techniques into the Deep South is due mainly to recent discoveries of important industrial minerals in the

Business

the By-Products

Dredge digging ladder uses 6-cu. ft. buckets



area through the efforts of state geological institutions, the U. S. Bureau of Mines, and the exploration activities of private capital. So-called "black sands" are found in several places in the southeastern states. The black sand or "heavies," as the trade refers to them, may consist mostly of magnetite along with the titanium and other minerals. The raw material mined here is practically free from magnetite, although processing is designed to remove traces of it.

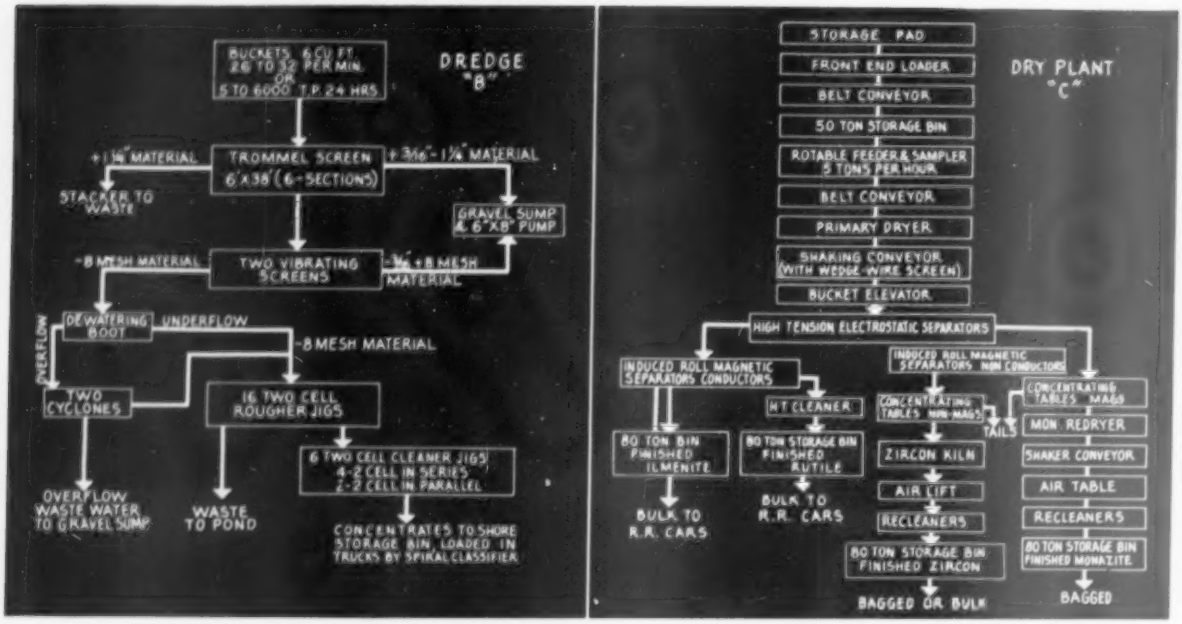
Operations of Marine Minerals, Inc., are on Horse Creek, about ten miles from Augusta, Ga. The company has 18,000,000 to 20,000,000 cu. yd. of dredging ground. Initial operations on Horse Creek began in June, 1955, and work is progressing up-stream. The Horse Creek operations are a short distance north of the billion-dollar H-bomb project near Aiken, a few miles east of the Savannah river. The area is semi-swamp in character, but trees and brush are removed before dredging starts.

The Yuba dredge, designated as Yuba No. 167, is of the ladder type. It has a bucket line of 6-cu. ft. buckets that unload at the rate of 26 to 32 buckets per minute. It is a highly efficient digging unit and has on it all the cost saving items that are used on gold dredges in the West. There total operating costs for processing gold bearing gravel are in the five-cent-per-ton range. Those costs include field costs of digging, screening and washing, gravity recovery of the values, and tailing or reject disposal. The Horse Creek unit can dig to a depth of 35 ft. below water, but the pay zone is above the 20-ft. depth range.

General features of the dredging operation are shown in Diagram B. The Yuba trommel screen, which receives material from the bucket line, is provided with $\frac{3}{16}$-in. openings, except for a slotted end section (1¼-in. by 3-in.) through which coarse gravel drops. Plus material made up of wood and clay balls is stacked as waste. Two Allis Chalmers Low-Head vibrating screens reject a $\frac{3}{16}$-in. to 8-mesh size that goes to the gravel sump. The minus 8 mesh is sent to jigs for the recovery of a bulk concentrate that contains the five industrial minerals. There are in the recovery section 16 two-celled rougher jigs and four two-celled cleaner jigs. The roughers are Pan American jigs, 42- x 42-in. in size, set in 16 lines of two cells per line. The Yuba cleaners consist of four flow lines of two cells each. Four single Pan American jigs are used for re-cleaning. Jigs handle 1 t.p.h. per sq. ft. of jig bed area, and pulp densities are in the 25- to 30-percent range.

The heavies recovered by the jigs are in the

The Wet Plant and the Dry Plant



minus 20-mesh range. Monazite is the heaviest mineral in the group, and staurolite is the lighter. The black concentrates are pumped ashore to a semi-portable de-watering plant that uses an Akins spiral. The product is trucked to a dry plant in which the five minerals are separated and prepared for market.

Pumps on the dredge include four 6-in., two 3-in. and one 2-in. All are Georgia Iron Works units. The dredge hull is 62-ft. wide at its widest point, and 140-ft. from stern to front of bucket ladder. A 100-ft. long stacker belt is provided. Power is purchased electricity.

Sand and gravel are pumped ashore to a portable bin assembly from which the material is trucked to a stationary washing and re-screening plant. Three sizes of gravel are produced: 1-in. to ¾-in.; a ¾-in. to ¼-in.; and a buckshot size. One size of sand is produced. Sand is re-washed and de-watered in a 20-in. Telsmith sand spiral, and the coarser aggregates are washed in a 20-in. Eagle Iron Works washer. Sand is delivered ashore from the dredge as needed. The coarse materials washer is a combination screw with log-washer paddles in the section below the pulp line. The plant uses two 4- x 10-ft. Allis-Chalmers vibrating screens. One is a two-deck unit and the other has three decks. The plant has a capacity of 125 t.p.h.

Frank Smith is superintendent. Mr. Smith formerly was with the Carolina Aggregates, Kathwood, S. C., an affiliate of the Becker County Sand & Gravel Co.

The dry plant involves the use of three rotary dryers: a Hardinge (Ruggles-Coles) preliminary dryer and one smaller re-dryer and a kiln. The primary dryer has a capacity of 5 t.p.h., the zircon kiln one t.p.h., and the third dryer ½ t.p.h. All use North American burners and can burn either gas or oil.

The dry plant includes high tension separators, and induced roll magnetic separators. All are products of Carpco Manufacturing, Inc. In addition to the high tension and magnetic equipment, there are four Wilfley concentrating tables, a Sutton, Steel & Steel dry concentrating table, and a large number of bucket elevators for handling intermediate plant products.

Bulk concentrate is trucked to the dry plant. The haul at present is a few thousand feet, but as the dredge works up-stream the haul will be a mile or more. At the plant, wet concentrates are conveyed by belt to a hopper under which is a circular plate feeder of the Challenge type. The feeder serves the primary dryer. Dried material passes to a shaking conveyor that also acts as a screen to take out foreign materials. It is equipped with



Magnets separate rutile from ilmenite in the primary circuit

wedge wire screen. From the screen the material is bucket elevated to the primary high tension.

"High tension" separation is a later development of "electrostatic separation." It makes use of a high rate of electrical discharge, compared to other systems. Gaseous ionization and electron flow are said to play an important part in the process.

A standard high-tension separator consists of four rotors that work in parallel. Each is 6 in. in diameter and 5 ft. long. Feed is introduced evenly to the top of the rotors so as to give an even blanket of material over the face of the rotor. A beam-type electrode is set at about the two o'clock position, with the beam pointed towards the rotor. The electrode consists of a metal tube. Parallel to it and ¾ in. away from it is a fine metal wire. The rotor is smooth and highly polished, and turns at a relatively high rate of speed.

Feed materials are split into two fractions by the high tension field. A four rotor machine uses a total of 2-hp., and a feed rate of 2½ t.p.h. per rotor is about standard. Some materials can be separated into clean concentrates at one pass, but more common practice is to give the material a second pass (cleaner circuit). Often, a third pass is used to scavenge the tailings. The Marine Minerals, Inc. plant uses four roughers, two throw cleaners, and two pinned cleaners on the primary high-tension circuit.

Minerals that are non-conductors receive a beamed discharge of electricity that gives them a high surface charge, causing them to be pinned to the rotor. This "pinning effect" helps to make possible the economic separation of minerals by high tension techniques. If minerals of various susceptibilities to a surface charge are fed onto a spinning rotor and are sprayed with a high voltage discharge, the poor conductors will assume or build up a charge on the particle and will be attracted to and pinned to the rotor. Particles having high conductivity properties will not assume, or hold a charge. Any charge they do get quickly leaks off to the grounded rotor. The good conductors, therefore, assume a flight pattern off the rotor at about the same trajectory as they would if no current were used in the system. The polarity of the charge is always opposite to that of the rotor. The separation is not static, as current flows in these cases.

High tension separation, in a commercial sense, is a combination of the lifting and pinning effect. Changes of humidity, temperature, etc., that can have a deleterious effect common to simple electrostatic processing do not seriously offset high-tension processing, although the material must be bone dry and a uniform temperature is helpful. The beam electrode wire used is usually 0.010 in. in diameter, and the fine wire tends to discharge rapidly. If used alone, the discharge pattern would be radial in character. The combination of the larger diameter tube and the fine wire creates a strong discharge pattern that is "beamed" in a definite direction, and the charges are concentrated in a narrow band. The degree of pinning effect can be altered by turning the electrode around on the axis of the tubular part of the electrode.

High-voltage rectifying equipment is used at the Marine Minerals, Inc. operation as the source of electricity in the high tension units. These are Carpco Manufacturing, Inc. rectifiers. They deliver up to 40,000 volts, pulsating direct current.

The magnetic separators used at Marine Minerals, Inc., are the high-intensity induced-roll types. Three rotors, one mounted above the other, become magnetic due to cores around which are wound adequate turns of wire to produce the magnetic effect desired. This effect is, in essence, passed to the revolving rotor so that conventional magnetic materials tend to cling to the roll, then later are thrown off or brushed off. The non-magnetic material is thrown off by the spinning rotor in a trajectory curve. The top rotor can act as a rougher, the middle one a cleaner, and the bottom one a re-cleaner, if desired. Middlings are re-circulated.

With the above brief description of the principles of the high tension separator and the induced magnetic units, one can get from Diagram "AA" the flow of material at Marine Mineral, Inc., in its simplified form. "A" and "B" on the diagram are wet concentrating tables the purpose and functions of which are steps in the up-grading of the monazite, zircon, and staurolite. The high-tension separators introduce some complications as to flow, for there are in use roughers, cleaners, and



High tension separators in the dry plant. Primary circuit to separate rutile and ilmenite from the sand

re-cleaners. Similarly, the rutile from the induced magnets can be cleaned and re-cleaned, if desired. In each case a small bucket elevator is required to return the several intermediate products to the system. At Marine Minerals, Inc., some 20 bucket elevators are in use.

While reading of the process may sound complicated, the recovery of rutile and ilmenite are efficient. It is a continuous process, and relatively simple. Power requirements are low. Man-power consists of an operator whose duties are not laborious, but more in the nature of a skilled technical supervisor.

A flow diagram of the dry plant operation at Marine Minerals, Inc., is given in Diagram "C", in a little more detail. Details of many of the cleaning and re-cleaning circuits are omitted for clearness, but it is hoped the reader can get these added data from the text.

The up-grading of the zircon, monazite, and the recovery of staurolite introduce gravity separation techniques in addition to the high tension and induced magnetic systems. Four Wilfley tables are in use at this operation. Two are in the zircon circuit and two in the monazite. A third "air table" is a part of the further up-grading of the monazite.

The first step in the monazite-zircon separation is to take the minerals as they come from the primary high tension and these are put through the induced magnetic separators. The monazite is magnetic and is removed by the induced roll. The zircon is non-magnetic and is thrown off. With the zircon will be such impurities as quartz, etc. With the monazite is staurolite. At the top of the induced magnetic separator has been provided a "magnetite scalper" to remove small amounts of that mineral from the mixture. Magnetite, having a much higher magnetic permeability, can be removed by low strength magnets that are incapable of having any appreciable effect on the monazite and staurolite. Diagrams "A" and "A-A," page 69, illustrate this mineral separation process.

From the induced magnets the zircon portion is delivered dry to the head of two Wilfley tables in parallel, where water is added and the zircon fraction sent over the tables. These tables produce a higher grade zircon that is sent to one of the Har-

(Continued on page 69)

Now –

to meet modern cement mill production demands

REX RATED

Centrifugal Discharge Bucket Elevators

First really new concept of elevator design in years!

The Rex Rated Centrifugal Discharge Bucket Elevator is a new approach to elevator design and operation — the result of exhaustive engineering research and field testing. Specifically designed for heavier loads, bigger capacity, longer operating hours — designed to meet the increased production demands of modern mill operations.

Balanced design is the secret

Rex Rated Bucket Elevators are designed around a sound engineering concept — Balanced Design. First, each part of the elevator is balanced against other parts for maximum operating efficiency, strength, durability. Next, these balanced components are combined to form an elevator that is matched against the exacting, tough requirements of cement mill operation. The elevator is fitted to the job — not only to fill the needs of today's heavier production schedules, but to meet the requirements of future, larger production schedules. Balanced design gives you balanced performance!

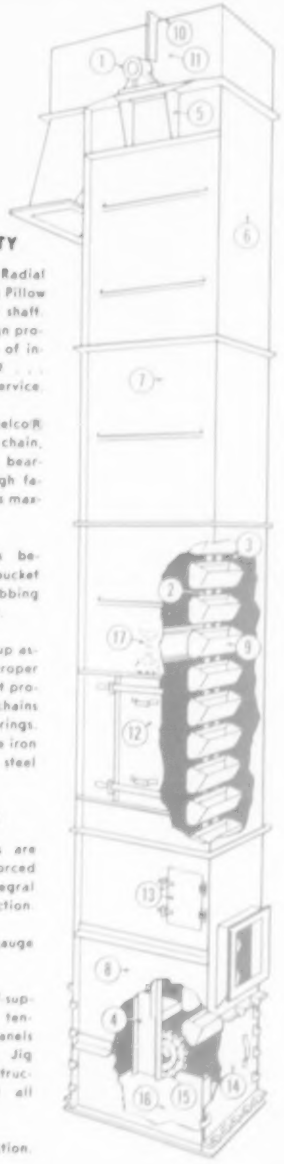
Greater capacity

One feature of Rex Rated Centrifugal Discharge Elevators is increased capacity. In fact, they more than meet the needs of closed-circuit grinding systems.

A hooded bucket and balanced chain design permit closer spacing of larger buckets. These elevators actually overlap the capacities of super-capacity elevators, while retaining the advantages of economy and dependability.

Most economical method for elevating materials

Compared to other elevating methods, Rex Rated Bucket Elevators give you three distinct cement mill application advantages: (1) takes little space — saves valuable floor area; (2) simple, vertical design cuts construction costs; (3) Rex Rated Balanced Design, practically eliminates down-time and production lags of ordinary elevators.



DEPENDABILITY

1. Shafer Double Roll Radial Thrust Roller Bearing Pillow Block supports head shaft. Unique bearing design provides a high degree of internal self-alignment . . . assures dependable service.

2. Heavy-duty ChabelcoR steel non-roller type chain, selected on low live bearing pressures and high fatigue strength, assures maximum life.

3. Generous clearances between casing and bucket edges eliminate rubbing . . . assure longer life.

4. Internal gravity take-up assures constant, proper alignment of foot shaft providing longer life for chains and sprockets and bearings. Has heat-treated white iron and hardened tool steel sleeve bearings.

RUGGEDNESS

5. Head shaft bearings are supported by reinforced bracket supports, integral with the lower head section.

6. Head section of ten-gauge steel.

7. "Sky-scraper" self-supporting casing, with ten-gauge steel side panels crimped for stiffness. Jig welded dust-tight construction. Dust seals at all flanges.

8. ¼-inch steel boot section.

BIG CAPACITY

9. Deep, wide buckets with hooded back and high front, closely spaced, assure maximum capacity, and complete discharge.

CONVENIENCE

10. Twelve-gauge steel split head section assures easy access to head shaft machinery.

11. Hardened cast steel segmental rim traction wheel with cast iron body keyed to head shaft.

12. Large access doors for easy maintenance and inspection.

13. Hinged type inspection door.

14. Front and rear access panels secured with special quick-acting spring clips.

15. Hardened cast steel segmental rim foot sprocket with solid cast iron body keyed to foot shaft. Rim sections easily replaced when worn.

16. Steel bottom plate assures easy cleanout.

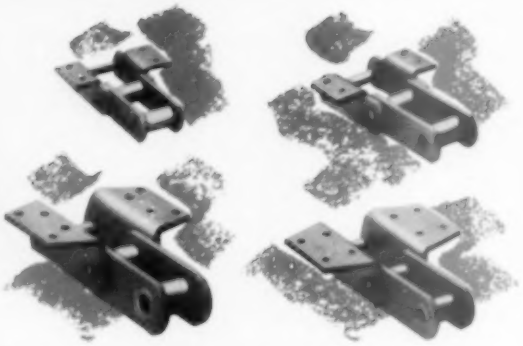
17. Take-up removal beam.

TURN THIS PAGE FOR MORE INFORMATION

CHAIN BELT COMPANY

LEADERSHIP . . . through creative engineering

And for any elevator... these Rex balanced components add greater capacity, extra life



Ultimate in chain design for cement and elevator service

New and improved chains were developed to meet the larger capacities of the Rex Rated Elevators. The result — chains designed for greater strength and durability that answer the requirements of every condition.

BALANCED DESIGN . . . Chain parts are balanced for utmost strength, lightest weight. There is less dead weight, less unneeded bulk. These chains take less horsepower to move than other chains for this service.

MAXIMUM WEAR-LIFE . . . High quality steels, proper heat treatment, controlled press fits, large bearing areas, hardened surfaces plus fine workmanship assure maximum wear-life.

ACCURATE PITCH . . . Close tolerances and controlled fits maintain accurate pitch for long, top-performance. Wide links and generous attachment length provide extra support for modern, large-capacity buckets.



Large-capacity buckets

The development of new chains permitted the use of buckets of new design. These buckets take bigger loads and discharge fast. Even fluffy and aerated materials load and dump quickly. Chains and buckets are matched for greatest strength, capacity and durability.

Style AC buckets

Special hooded back maintains a high discharge efficiency even when buckets are continuously spaced. And the high front increases the "water level" capacity to allow greater capacity for free-flowing dry materials. Special air vents in the bottom act as a relief valve to prevent trapping during loading and unloading of fluffy, aerated materials. Extra thick bucket walls provide greater strength, longer wear.

Style AA buckets

Exceptionally tough and wear-resistant for handling heavy, abrasive materials. Cast of high-grade Rex Quality Malleable Iron. Front lip is extra thick for longest life.

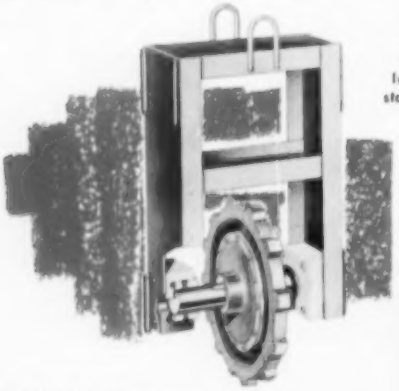


Segmental rim sprockets and traction wheels

These tough and long-lasting sprockets and traction wheels have a special hardened, demountable cast steel rim. When replacement becomes necessary, you need only replace the rim section. Sprocket rims are machined both sides — are easily reversed to give double life. Besides giving extra long service, these sprockets and traction wheels will reduce down-time — save you hours, even days, of time.

Internal gravity take-up

This internal gravity take-up assures proper alignment of the foot shaft by automatically compensating for chain and sprocket wear and temperature variations. Chains, bearings and sprockets work better and last longer. Internal mounting makes boot section dust-tight. Special long-life bearings stand the roughest service without attention.





Shafer Self-Aligning Roller Bearings

Unique internal self-aligning feature of this bearing works smoothly when other bearings fail.

Mounted on the elevator head shaft, these Shafer® Double-Row Radial Thrust Bearing Pillow Blocks have a high degree of internal self-alignment. Heavy-duty construction plus self-aligning feature and special "Z" lubricant seal insures longest service. Micro-Lock adjustment makes installation and adjustment easy.

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dinge kilns. The quartz fraction, or tailing, is wasted. After calcining at 1200 deg. F, the zircon is again passed through a small set of high tension separators to remove any remnant rutile or ilmenite, the rutile and ilmenite being thrown off the rotor. The zircon, with some remnant monazite, is sent to a small set of induced magnets and the finished zircon is ready to ship. The monazite fraction can be re-introduced into the monazite circuit.

In a similar manner, the monazite fraction from the primary induced magnets (See Diagram AA) is delivered dry to the head of two Wilfley tables in parallel, where water is added and the material tabled. The monazite, with the higher specific gravity, comes off as a concentrate. The lighter material is practically all staurolite, and it is being ground stored for future marketing. Staurolite is finding a growing use in the portland cement industry, and its use there is said to be related to the production of high-early-strength cements. The monazite fraction is sent to its Hardinge redryer, after which it is further up-graded on the air table.

The air table resembles somewhat a conventional concentrating table except that it is much smaller; about 4- x 8-ft. in table area. It is provided with riffles similar to the larger wet Wilfleys previously mentioned. Low pressure air is introduced near the base of the riffles in such a manner as to make the fine material fluffy in character. This, plus the slight turbulence, makes possible a separation of the dry materials due to differences in specific gravity. The "heavies" settle in the riffle and are carried to the riffle ends where they are discharged. The lighter staurolite overflows the riffles and a separation thereby made. If desired, the monazite from the air table can be further up-graded (re-cleaned) by passing over a smaller set of high tension separators and any remnant rutile, and ilmenite, removed. The monazite or magnetic fraction then can be sent to induced roll magnets and any remnant zircon removed. The monazite then is ready for shipment.

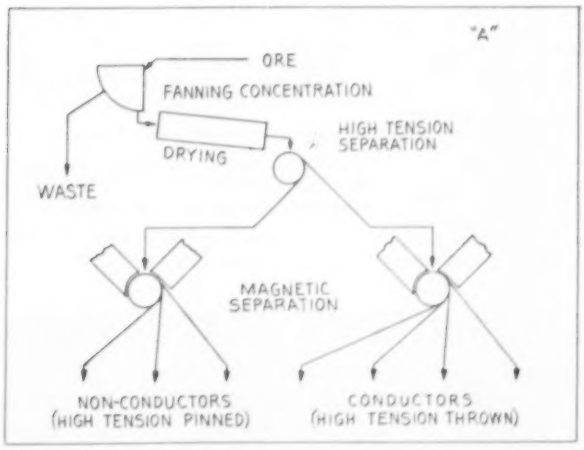
At the time of inspection, plans were being developed to re-wash the wet concentrates from the dredge at a ground based plant near the dry plant. Purpose of the re-washing is to remove clay and other impurities from the surface of the mineral grains, as surface coatings can have an adverse effect on the high tension and induced magnetic separations in the dry plant.

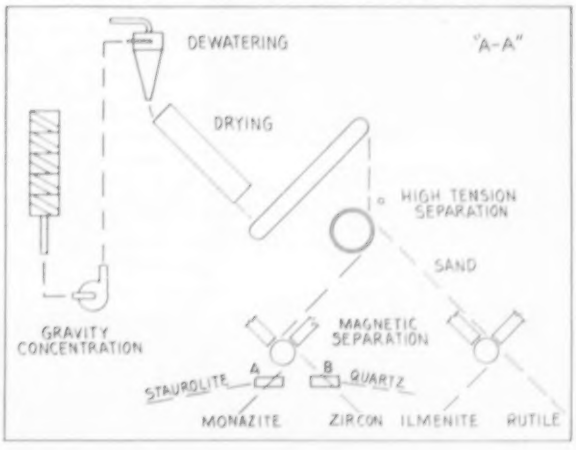
The dry plant was designed by the engineering staff of Carpco and Marine Minerals, Inc. The company built the plant using Butler buildings. In the dry plant is a laboratory. Control, in essence, is based on sending the various separated minerals through small Carpco laboratory high tension and induced magnets under exact systems of procedure. The amount of impurities in any given mineral can be gauged.

In the deposit, rutile is present in lower percentages than the ilmenite, but the rutile to ilmenite ratio is higher than the Florida deposits. Rutile is considerably higher in titanium than is the ilmenite. The titanium and other minerals are shipped both in bulk or in closed hoppers. Most of the products go to Chattanooga, Tenn., where the parent companies have plants for further processing.

Robert Griffith is general superintendent. Grant Leeson is dry plant superintendent, Victor Cote is dredge master, and John Munzenrider is engineer. Marine Minerals, Inc., is owned jointly by the Vitro Corporation of America, Crane Co., and some French capital. An affiliate of Marine Minerals, Inc. has on the drawing board a similar project to be built near Panama City, Fla.

Diagram "A", left, shows how minerals separation is divided into non-conductors and conductors; **diagram "A-A"** shows simplified flow of materials in high tension and magnetic separation





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The Universal 293QS on a road construction site west of Tremonton, Utah, 1955.

The Universal 293QS TwinDual Gravel King has

"Increased our pay load by 33⅓%, lowered operating costs 10c per ton"

Says Jed R. Abbott of Germer, Abbott & Waldron Construction Company, Tremonton, Utah

Abbott's company saved $20,000 on its first large order for aggregate produced by the Universal 293QS.

"After turning out 200,000 tons of material for U.S. Highway 91 last year," said Abbott, "this is the most economical plant we've ever operated. Our payload is a third more and our costs were ten cents a ton less than with other crushing equipment.



More than a gravel producer

The 293QS is the most versatile machine on the market—two plants in one! Inquire how you can convert it quickly from gravel to crushed stone production and back again.

"On the Highway 91 job, it took three D-8 Cat dozers and a scraper to feed the 293QS. The plant we were using before required only one D-8. That'll give you an idea of the difference in capacity."

You'll have a story to be proud of, too, when you work with the Universal 293QS. Producers are enthusiastic about the ability of this plant to make up for lost time. As Jed Abbott puts it, "The severity of Utah weather could mean the loss of much production, but with the Universal 293QS we have the capacity to fill larger orders, fill them faster, charge less and make more money in the long run."

Nearly everyone, like Germer, Abbott and Waldron, goes through seasonal or other costly shut-downs. Costly, that is, unless like Germer, Abbott & Waldron, you've discovered crushing equipment like the Universal 293QS — designed to recapture time lost — at a profit!

Write for complete facts on the Universal 293QS Gravel King now.



Volume production through improved design

Finished material on final belt. Exclusive Universal TwinDual roll crusher permits up to 100% wider discharge opening of the extra-large primary jaw crusher. Jaw efficiency increased by pre-screening pit-run material before entering crusher.

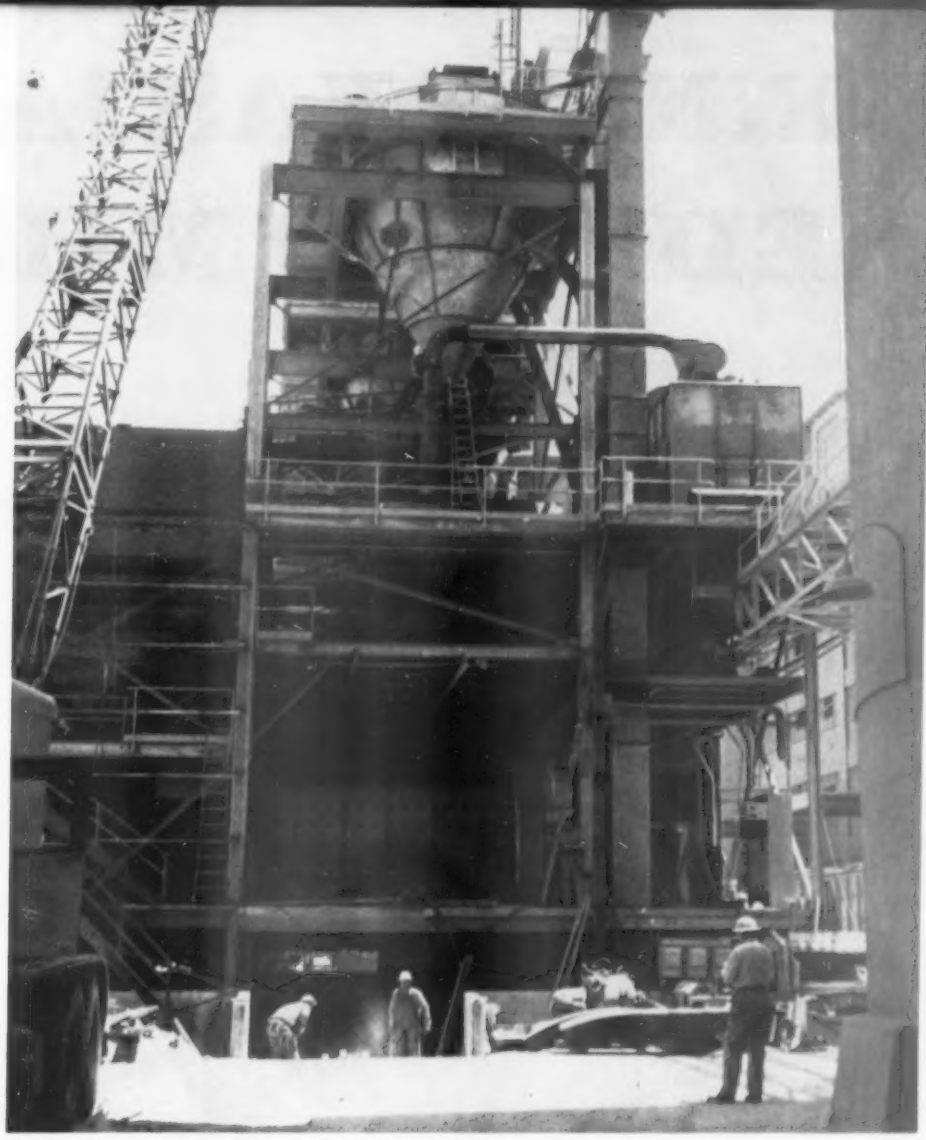
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Finish mill being installed with the 16-ft. air separator shown above

Expansion makes Victorville

One of Nation's Largest

EXTENSIVE MODERNIZATION and expansion of Southwestern Portland Cement Co.'s Victorville, Calif., plant have made it one of the larger producing units in the country. The company has rebuilt its first five kilns and has added a new crushing plant, a preliminator mill, four long kilns, five finish cement mills, and six finish cement silos. New bulk handling facilities provide for simultaneous loading and weighing of trucks or railroad cars.

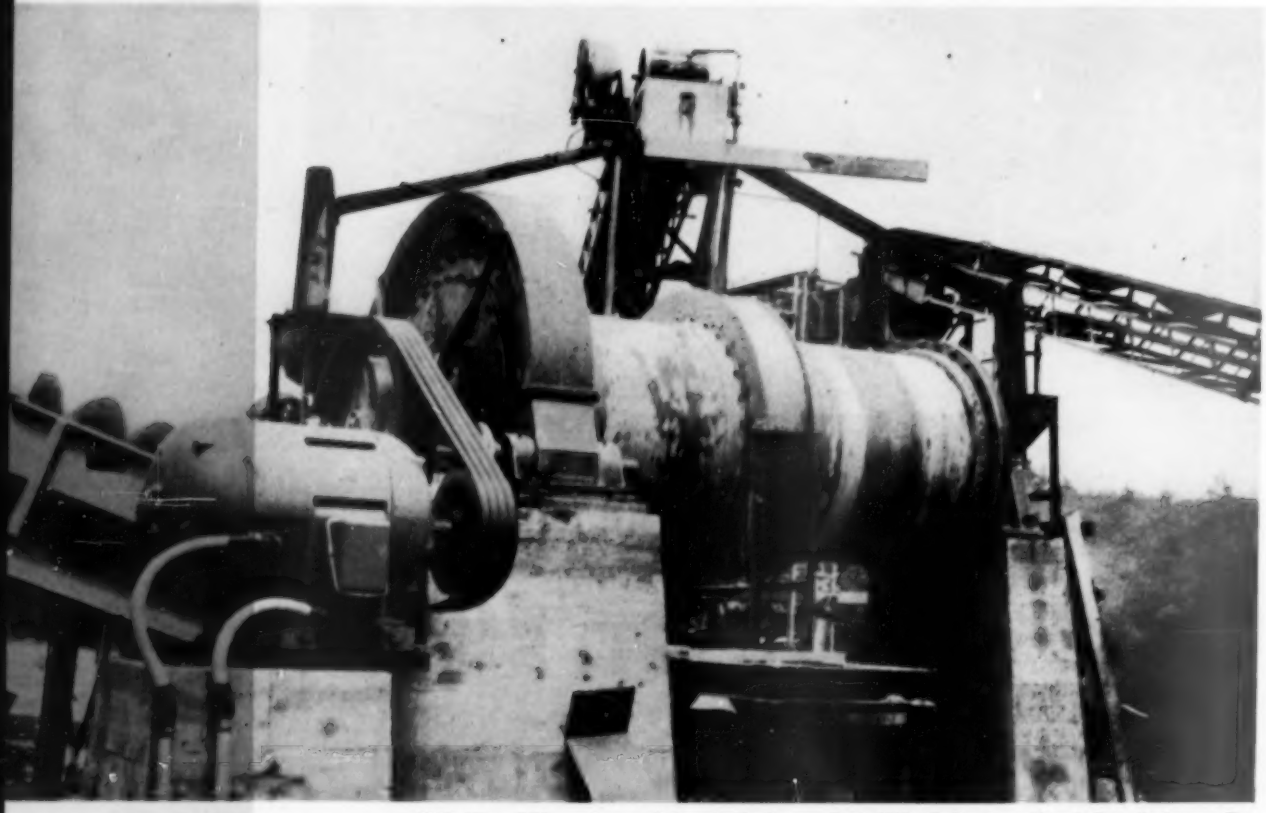
In the raw grinding department, the company practices closed circuit grinding with two of the circuits using liquid cyclones in conjunction with screens and four using screens alone.

There are six 2-compartment mills in the raw grinding section. Four mills are 7- x 26-ft., one is 7- x 40-ft., and one is 7- x 22-ft. in size; all mills are fed by vibrating feeders.

(Continued on page 74)

ON PENNSYLVANIA'S KENNEDY ROD MILLS

Grinding Specification Sand from Silica Rock on the Ridges of the Keystone State



KVS 5′ x 12′ center peripheral discharge Rod Mill, Refractory Sand Co., Andreas, Pa.

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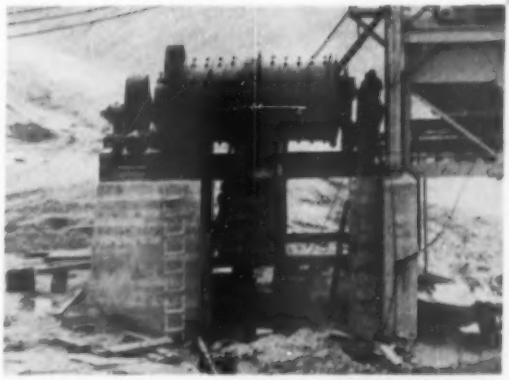
KVS 5′ x 12′ Rod Mill, Refractory Sand Co., Andreas, Pa.

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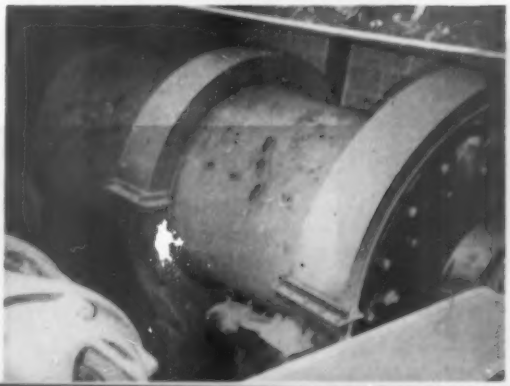
Send for Bulletin describing KVS Machinery and Equipment



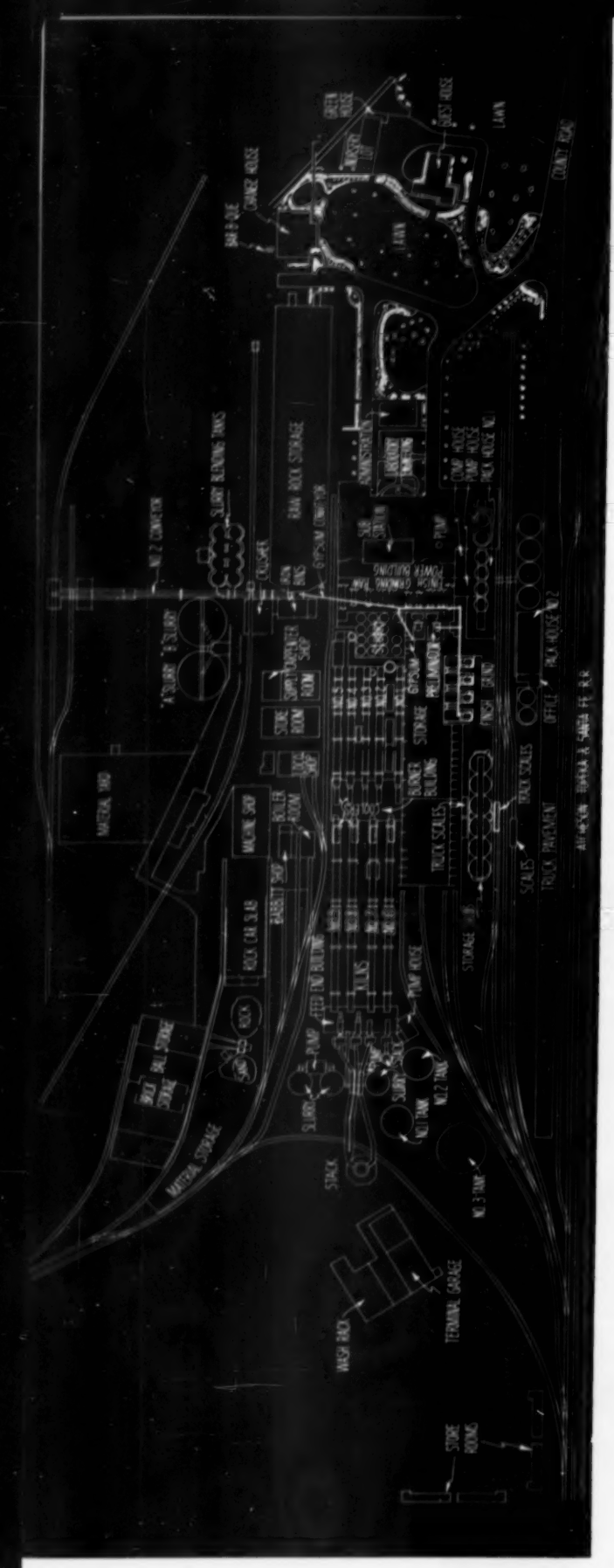
KVS 6′ x 12′ center peripheral discharge Rod Mill, Hempt Bros., Holly Springs, Pa.



KVS 4′ x 10′ Rod Mill, Frank M. Sheesley Co., Kunkletown, Pa.



KVS 4′ x 10′ Rod Mill, Alliance Sand Co., Palmerton, Pa.



Layout of the plant at Victorville

By WALTER B. LENHART

Experimental work on use of cyclones in closed circuit with the raw mills started in 1951. In the system first used (ROCK PRODUCTS, July '53, p. 62), pumps delivered mill discharge to vibrating screens located well above the mills. Throughs from the screen flowed by gravity to liquid cyclones and the oversize went back to the raw mills. The cyclone produced a finished slurry, the plus fraction of which also returned to the raw mills. Experiments carried out on the use of various screen mesh sizes on the screens ahead of the cyclones showed that cyclones were not needed if a finer screen were used.

The company next experimented with larger screens of a different type and tried another type of cyclone. At the time of inspection, raw mills No. 1 and 6 were each in closed circuit with a 10-in. liquid cyclone. Tests indicated that feed to the cyclone should be constant to get optimum results. To offset surges in the feed—raw mill discharge—a constant-head tank, equipped with a float valve, was inserted in the circuit between the mill and the cyclone. Slurry is pumped from the tank to the cyclone where, due to centrifugal action, a size separation is made; the coarse fraction is returned to the raw mill. The finished slurry flows to a re-cycling tank, which furnishes make-up pulp for the constant-head tank. A second pump moves finished slurry from the re-cycling tank to slurry blending tanks.

Raw mills No. 2, 3, 4, and 5 have individual 5½-x 8-ft. single-deck vibrating screens. These are mounted on the building roof above the mills. Raw mill pulp is pumped to the screens, and the plus fractions are returned to the raw mills. Finished slurry goes to the slurry blending tanks. Southwestern is experimenting with different screen sizes and types, mostly in the 20 to 40 mesh range.

(Continued on page 80)



at Pacific Building Materials, Portland Oregon . . .

UP GOES ANOTHER **SAND PREP**

No. 8 in a series of steady WEMCO producers

1956 addition to this Portland company's sand recovery operation is the 36-inch Wemco Sand Preparation Machine being installed above. It has an outstanding performance record to live up to! For instance, since the first of 7 similar Wemco units went into operation in 1948, plant manager Howard Hamlin reports that to date **"Only $33 worth of spare parts have been ordered."** But the real story of Pacific's continued use of Wemco Sand Preparation Machines lies in their ability to invariably produce specification materials under all feed conditions. Wemco's slow-speed, multiple-pitch spirals, operating in a large, quiet pool, insure the recovery of the desired fine (150 mesh) sand without a sacrifice in raking capacity. This unbeatable combination of low-operating costs and specification sand spell profits for Pacific on every one of their 8 Wemco units. They can do the same for you.

Send Wemco your sand problems for profitable solutions.

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new TS-260



power-matched for production

power-matched to capacity With more than 18 horsepower for every yard of struck capacity, the new TS-260 has plenty of power to move full loads at full speed—under all conditions.

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Motor Scraper



200 hp
11 yd (struck)
14 yd (heaped)

and profit on the job!

***power-matched* for speed** The big Allis-Chalmers diesel engine provides high torque at both high and low engine speeds resulting in smooth shifting and fast acceleration. And with plenty of engine power, the TS-260 loads fast, hauls fast, dumps fast . . . moves big payloads at low cost, even under tough conditions.

***power-matched* for operating ease** Overlapping gear speeds in all four gear ratios reduce gear shifting, speed work cycles. And with 90-degree steering for rapid maneuvering in close quarters, it's easy for the operator to get the most out of the TS-260.

The new TS-260 gives you these four basic advantages . . . and many important new features

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CHECK IT FROM EVERY ANGLE—



the New TS-260 *is* Designed for Low-Cost Dirt

"Live action" hydraulics for sure control. Positive gear-driven pump provides constant live power for both steering and scraper operation. Full-flow filtering, cross relief valves and simple design make this an efficient, safe performer.

Positive 90-degree steering for close-quarter maneuverability. The steering wheel is direct-link connected to the steering valve. A 30-degree turn of steering wheel directs full pump flow to two double-acting steering jacks for fast, positive turns up to 90 degrees. For slower turning at high speeds, a slight turn of steering wheel provides a smooth, regulated response.

Double-safety brakes for positive stops. Big, four-wheel air brakes provide sure braking under full load at full speed . . . and an air reservoir system with emergency relay valve means positive braking safety.

"Boiling-action" loading for big payloads. Combination of curved bowl bottom and offset cutting edge provides a "boiling" action that eliminates voids . . . builds profitable, heaped loads.

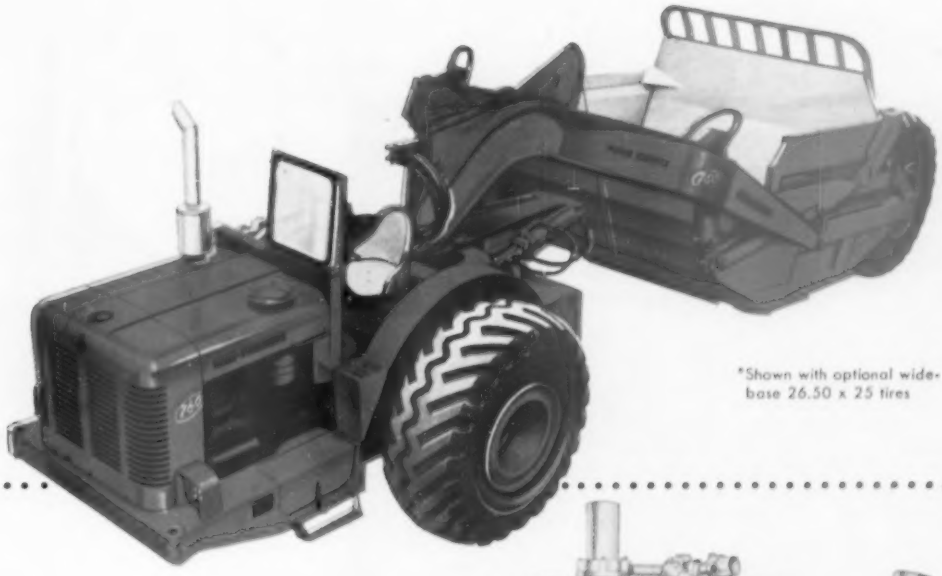
Quick, clean spreading with high apron and forced ejection. Patented linkage moves apron ahead and up when ejector goes forward . . . providing high apron lift and exceptionally large opening for clean, easy-to-control unloading.

Balanced weight distribution for maximum traction, long tire life. When empty, 66 percent of entire TS-260 weight is on front wheels—34 percent on rear wheels. When loaded, each wheel supports equal weight—providing excellent flotation and fast hauling.



Get all the Facts . . . NOW!

See your Allis-Chalmers dealer for full details on the new TS-260. Find out how this new motor scraper is *power-matched* for production and profit on the job.

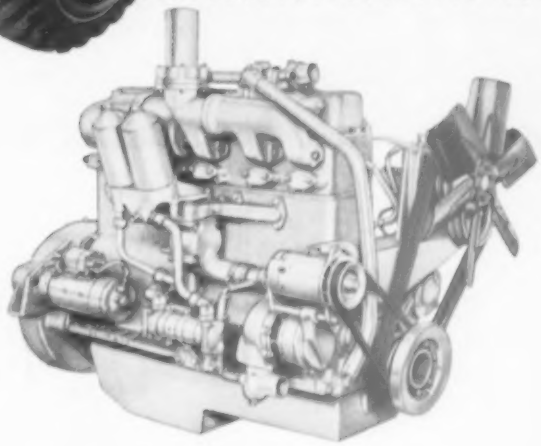


*Shown with optional wide-base 26.50 x 25 tires

Choice of tires to fit job conditions*. Standard 21.00 x 25 (20-ply) or optional wide base 26.50 x 25 (20-ply) tires provide a choice that insures carrying capacity and full flotation for steady going in all types of material.

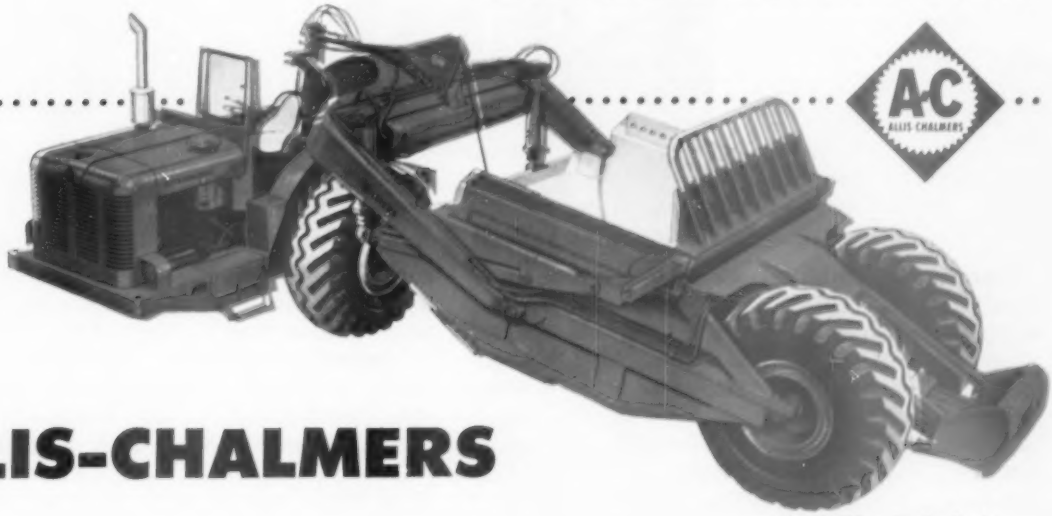
Big 200-horsepower Allis-Chalmers diesel engine. The 844-cubic-inch piston displacement and conservative 200-horsepower rating of this outstanding diesel engine provides plenty of reserve for low-cost operation under all conditions. "Follow-through" combustion results in sustained power, low peak pressures . . . smooth, steady performance.

New easy-shifting transmission. There's a correct gear ratio in the TS-260 transmission for every speed, every work condition. New clutch brake and gear overlap in all four speeds makes it easy to shift gears smoothly, maintain steady acceleration and full pulling power.



Heavy-duty power train. The TS-260 power train is designed to transmit high engine torque to the drive wheels with maximum efficiency. The engine, clutch and constant-mesh transmission are assembled as a unit to assure accurate alignment. Simplified removal of each individual component provides easy serviceability.

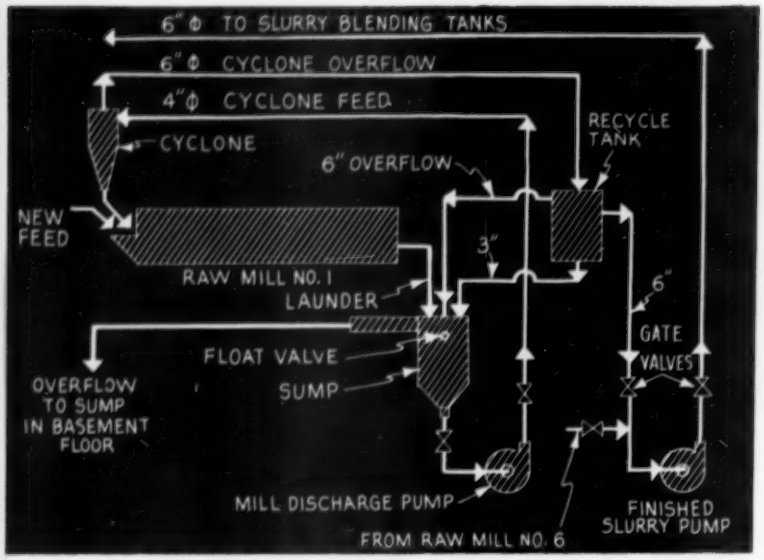
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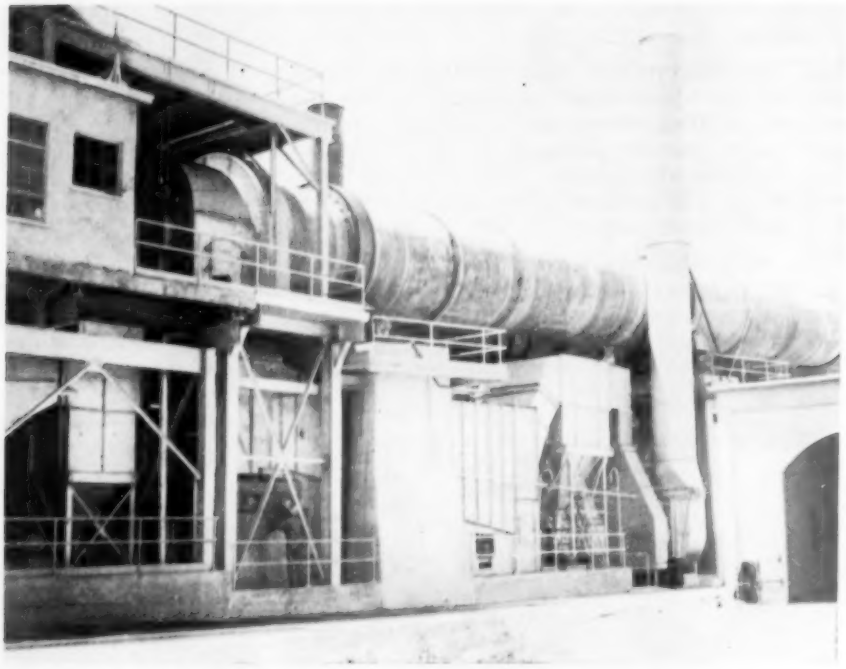
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Above: Liquid cyclone in closed circuit with raw mills, No. 1 and 6

Left: Flow diagram of raw mill showing function of liquid cyclone



A 7- x 33-ft. cooler for No. 9 rotary kiln

A preliminator mill, 9½- x 8- x 10-ft. in size, was installed during 1950 on the finish side of the grinding room. Ground material from this mill is distributed to bins over finish mills No. 2, 3, and 4. There are nine finish mills in addition to the preliminator mill; all are equipped with separators. Mill No. 2 is 7- x 22-ft. and has a 14-ft. separator; No. 3 and 4 are 7- x 26-ft. also with 14-ft. separators. The last five mills have been installed during the past two years. These mills are 10½- x 16-ft. single-compartment ball mills, fed by electric vibrating feeders. Each of the five new mills is powered by a 1000-hp., 2300-volt synchronous motor, and each is charged with 144,000-lb. of steel grinding balls. To date, the most satisfactory loading for each of these mills specifies 20,000 lb. each of 1-, 1¼-, 1½-, 2-, 2½-, and 3-in. plus 4000 lb. of 3½-in. and 20,000 lb. of 4-in. sizes. Periodic

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"MOST ECONOMICAL AND DEPENDABLE EQUIPMENT WE COULD GET"



C. D. Stewart, a partner in Wells and Stewart Construction Co. of Las Vegas, Nev., thinks highly of his Caterpillar machines. "For our type of work," he says, "they are the most economical and durable equipment we could get. We find our machines very simple to operate, and we're most happy with them. Our dealer service is excellent, too." In addition to the No. 6 Traxcavator shown here loading gravel at their crushing plant, Wells and Stewart own two track-type and two rubber-tired tractors built by Caterpillar.

Now there is a successor to the No. 6. It is the new Caterpillar No. 977 Traxcavator*, with 100 HP CAT* Diesel Engine and 2¼-yd. bucket. It and the No. 955 (1½ yd., 70 HP) and the No. 933 (1 yd., 50 HP) comprise the new Caterpillar-built Traxcavator line.

These three new Traxcavators are designed from the ground up as excavating and loading machines. Weight, horsepower and bucket capacity are perfectly balanced for top efficiency and economy. All three have these advanced Caterpillar features: 40-degree bucket tip-back at ground level for more leverage, less spillage. High reach without strain, thanks to extra-strong box section arms. Long-lasting oil clutch, which seldom needs adjustment and stands up to rough duty in pit or quarry. Conveniently placed controls and "built-in" operator comfort.

There's a Caterpillar-built Traxcavator, with choice of buckets and attachments to increase versatility, that will cut costs on *your* operation. Ask your Caterpillar Dealer for an on-the-job demonstration today.

Caterpillar Tractor Co., Peoria, Illinois, U.S.A.

CATERPILLAR*

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NAME THE DATE... YOUR DEALER WILL DEMONSTRATE



New cement silos are equipped with Airslides. Cars and/or trucks are weighed on separate track scales as they are being filled

addition of 4-in. balls compensates for wear. The plant now has extra finish-grinding capacity.

Two kilns were added to the production line during the past two years—kilns No. 8, and No. 9. Both kilns are 10-ft. 6-in. x 330-ft. in size and are equipped with 7- x 33-ft. inclined grate coolers. The kilns are oil fired with bunker "C" fuel oil. Each of these kilns added about 2500 bbl. per day to current production. The older kilns are 200-ft. long and have various diameters. All kilns are provided with inclined grate coolers.

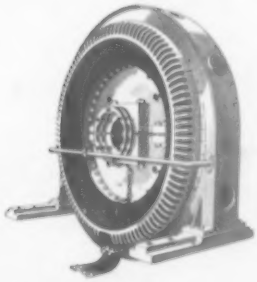
Kilns No. 8 and 9 (the newer ones) are lined with insulation brick in the zone between the chains and calcining section. Basic brick are used in the burner zone, and 50 to 70 percent alumina brick in the remaining sections with 70 percent brick in the hotter zones. Recording pyrometers are being used on an experimental basis with the new kilns. One thermocouple is installed 127-ft. from the hot end of the kiln and the second 207-ft. from the first, towards the cold end. Two copper collector rings, connected to recording instruments, circle the kilns at points near each thermocouple.

Various units record burning zone, calcining zone, feed end, secondary air and cooler outlet temperatures. Feed end draft, hood pressure, primary air pressure, secondary air flow, kiln speed, kiln feeder speed, oxygen and total combustible are also recorded.

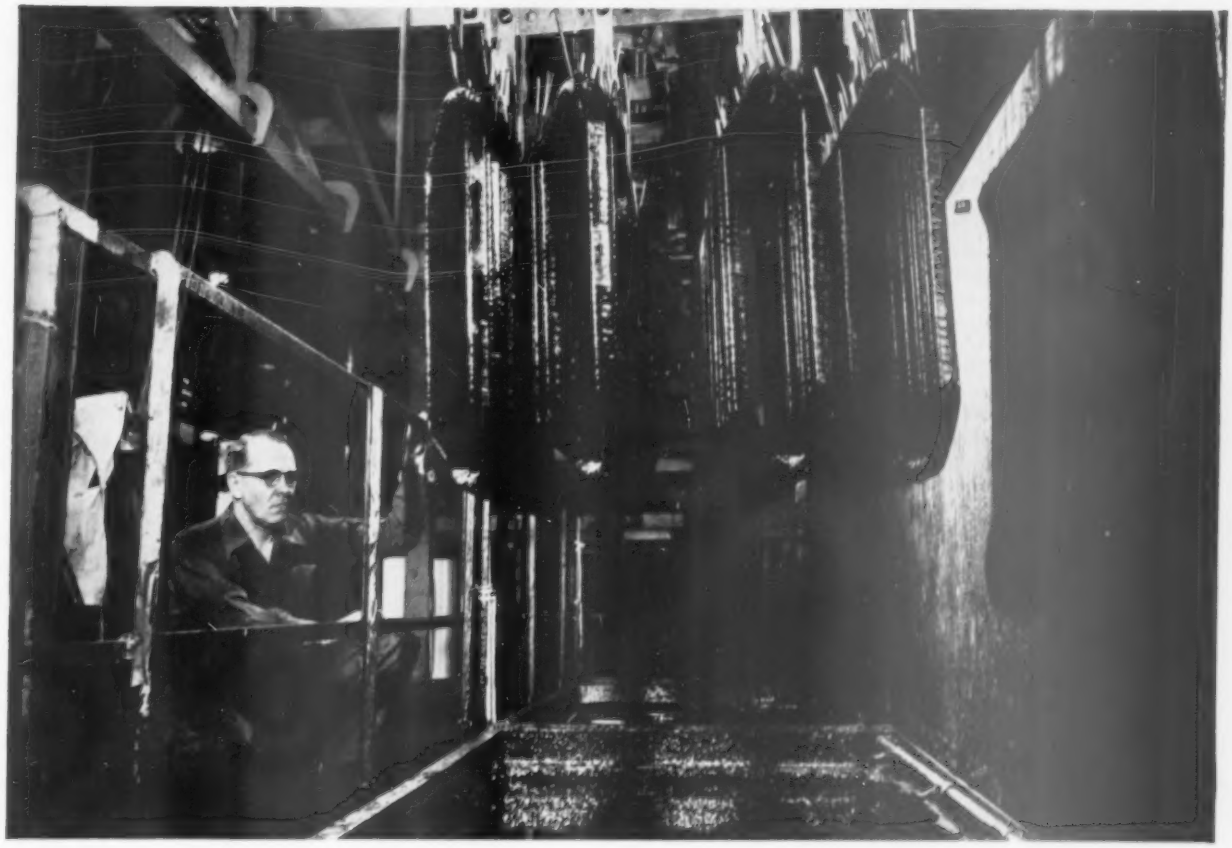
Six new finished-cement silos have been built as part of a new bulk-loading system for cars and trucks. These hopper-bottomed silos use 16-in. Airslides to gather and deliver cement to transporta-

(Continued on page 118)

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HOW G-E SYNCHRONOUS MOTORS
REDUCE MAINTENANCE COSTS



An insulating bath helps fight moisture

Moisture has the unhappy habit of working its way through motor coil insulation and reducing its capacity to withstand voltage stress. To guard against exasperating production-line shutdowns, General Electric seals coils with a coating of high-grade insulating resins. This seal is applied by a conveyor belt dip and bake system.

It works like this. After the main body of insulation is applied in the form of tapes and films of non-hygroscopic materials, each set of coils is placed on a conveyor and dipped in a bath of special, synthetic insulating materials. This way the coating is uniformly applied. Then the conveyor carries the coils into a huge oven and cures them for a specific length of time. The cycle is repeated until the proper seal is built up. Each step is automatically and precisely controlled—length of dipping and baking time and temperature.

This means the coils on your G-E synchronous motor are protected by a hard, tough insulation with high dielectric strength and high resistance to moisture and contaminants. Its glossy surface makes the coils easy to clean too.

All this adds up to less maintenance and down-time. For more information on G-E synchronous motors, contact your nearest General Electric Apparatus Sales Office or write Section 775-4 for Bulletin GEA-5332. General Electric Company, Schenectady 5, N. Y.

GENERAL ELECTRIC

Carbonation of Lime Putties To Produce High Grade Building Units

CONCLUDING ARTICLE

. . . describes basic conditions required for manufacture of properly carbonated lime putties, and summarizes advantages of products

By NISSAN ZALMANOFF†

FROM THE CONTRADICTORY CONCLUSIONS presented in Part I,* it apparently could be derived that it is technically impossible to obtain mechanically strong building elements by the carbonation of lime putties. In investigating this question the author carried out numerous series of experiments to determine the maximum continuity of the liquid phase in a putty of various stages of carbonation that still would enable the reaction to proceed at a reasonable speed. For this purpose high-calcium lime putty was placed in a closed vessel already containing an hygroscopic substance, and CO_2 of high concentration was introduced. The lime putty thus took part in two parallel processes which occurred simultaneously and resulted finally in a state of complete carbonation and full dryness.

Conditions inside the vessel, with regard to carbonation, are quite opposite to that existing in the atmosphere. While in the atmosphere, drying conditions are intensive compared to the low concentration of CO_2, the CO_2 concentration inside the vessel is much more severe than the moderate drying conditions therein.

The results of these experiments indicated that as soon as a certain stage of dryness was reached, a corresponding carbonate-content was instantaneously established in the putty. Every degree of water-content, which represents a certain state of continuity of liquid in the putty, has a specific maximum of carbonate-content which is achieved immediately as the degree of water-content is fixed. The results can be illustrated on a graph in which the abscissa represent the "water content" and the ordinate the "carbonate-content." It was found that every initial mixture of a certain ratio of lime to water has one defined curve, which will be called "ideal curve for carbonation." The following graph shows

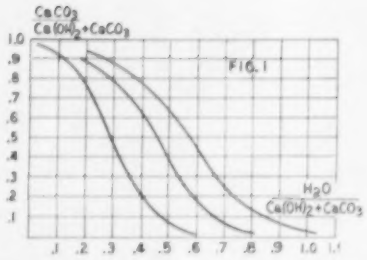


Fig. 1: Graph showing "ideal curves" for various initial water contents of same kind of lime

"ideal curves" for various initial water contents of the same kind of lime.

Results of these experiments indicate the following important facts:

1) Any variation carried out in the CO_2 concentration inside the reaction vessel, even to a large extent, but still remaining in the high range of concentration, does not cause any change in the "ideal curve" of a lime putty.

2) Samples which were taken from such locations in the putty in which the drying process was delayed (due to their being deep inside the body or being remote from the hygroscopic material), showed a corresponding delay in the degree of carbonation. The resulting delay in the carbonate-content was to such an extent that the point expressing the relation between two variants remained on same curve but only in its lower part.

It is obvious that the "ideal curve" is not merely accidental but indicates a specific quality of the putty. The degree of carbonation of putty is not related to the period of reaction and is only the function of the degree of dryness, thus making the rate of reaction dependent only on the speed of drying. The latter can be varied by controlling the temperature, relative humidity, and velocity of the gas carrying the CO_2 (when the same gas is used both for carbonation and for drying the putty.)

The situation becomes different with decreasing concentration of CO_2, while simultaneously intensifying the drying conditions to such an extent that the latter no longer control the reaction, which now starts to be governed only by the concentration of CO_2. Such cases are represented in the graph only by points lying on the left side of the "ideal curve", which means that the reaction takes place in a lower state of continuity, a fact which must result in a decrease in the mechanical strength of the final carbonated product. An outstanding example of this case is the process of carbonation of lime putty in atmosphere, which is illustrated below.

This is an extreme case of a process which takes place along a line lying on the left side of the "ideal curve"

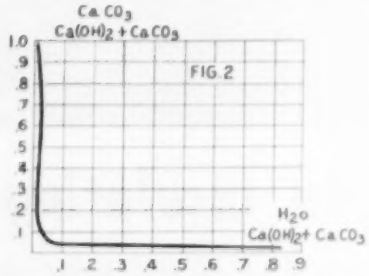


Fig. 2: Graph illustrating carbonation of lime putty in atmosphere. This takes place along a line lying to the left of the "ideal" curve

and which results in a product of inferior structural strength. No practical carbonation of lime putty can occur in the field on the right side of the "ideal curve"; although, theoretically, it can be done if allowed to proceed for almost infinite time. Further investigation of the nature of the "ideal curve" shows that it lies approximately in the same region of a theoretical curve which expresses the absolute continuity of the hydrate component in the variable system of the hydrate-carbonate of the putty. The following

†Chem. Engineer, Hebrew Institute of Technology, Haifa, Israel.

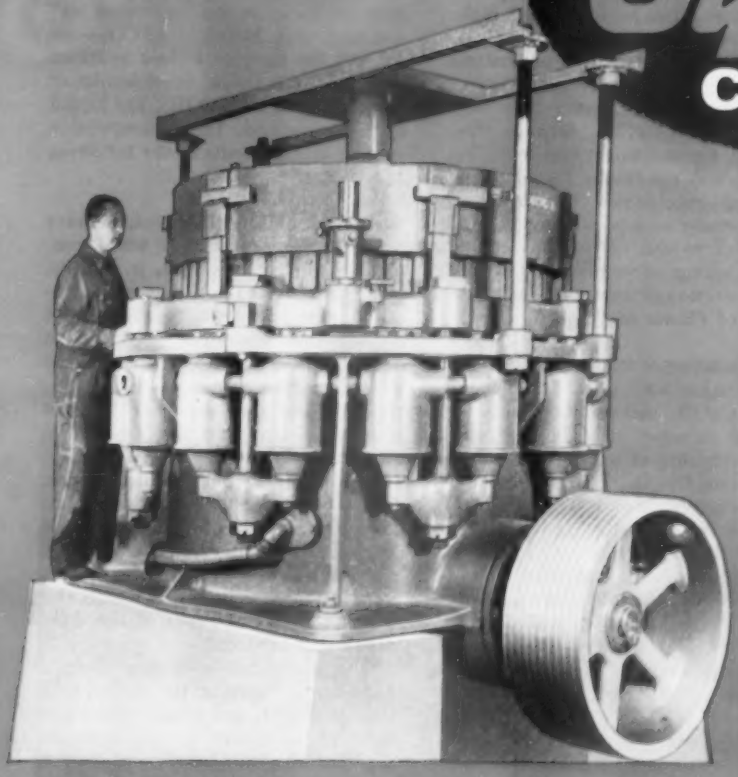
*Rock Products, August, 1956, p. 182

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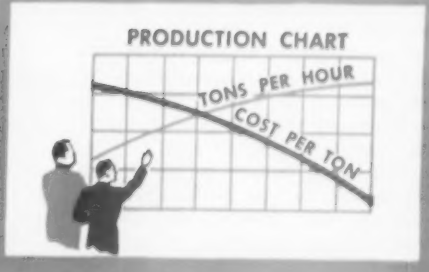
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Large capacity and high efficiency, resulting in lower power per ton of finished product, point up the advantages of the GYRADISC for profitable production of fine specification material as well as for preparation of finer feeds for rod, tube, ball mill, or other types of grinding operations. Tests in actual installation have effectively demonstrated that the GYRADISC produces 60 to 70 tons of minus 8 mesh product per hour with corresponding quantities of finer sizes depending upon material, feed size and moisture content.

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Symons Gyratory and Cone Crushers

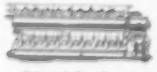




Mine Hoists



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Diesel Engines

graph illustrates the comparison between the empirical "ideal curve of carbonation" (curve "A") and the theoretical curve of maximum continuity of the hydrate in the lime putty being carbonated (curve "B").

The interpretation of these curves indicates that directing of the carbonation process of a lime putty along its

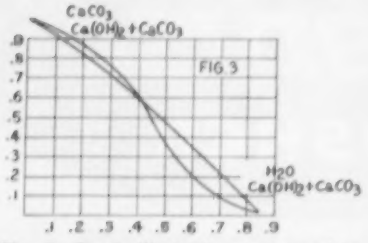


Fig. 3: Graph illustrating a comparison between the empirical "ideal curve" of carbonation and the theoretical curve of maximum continuity of the hydrate in the lime putty being carbonated

"ideal curve" can be considered as a precipitation out of a more or less absolute continuous system as regards to its active component. According to previous concepts, such a precipitate should possess a high structural strength, a fact which was ascertained by numerous high strength carbonated lime putties prepared by the author (see below).

It is worthwhile finding out the extent to which the explanation of the continuity of the liquid phase at the interfaces of the precipitate with all the consequences serves as a sufficient answer to the resulting good structural qualities of the precipitate. It was Le Chatelier who pointed out that calcium sulfate, which is precipitated from its aqueous solution by alcohol, although consisting of a crystalline lattice of a repetitive pattern, lacks any mechanical strength. According to Le Chatelier's theory, there is a basic requirement for obtaining a good mechanical strength, namely a supersaturation of the solution involving a metastable state of the system at the time of the precipitation. This concept, which is the basis of the crystalline theory of hydration of portland cement and Plaster of Paris, assumes the existence of at least two identical chemical compounds in different states of hydration in the solution. The degrees of solubility of the two forms of the same compound are considerably different, so that while the solution is saturated with respect to the primary, more soluble compound, it becomes supersaturated with respect to the secondary less soluble compound into which the primary compound is transformed.

If this theory is taken as a basis for explaining the "setting" of the carbonate, it should be assumed that the latter compound is present in the solution at the time of the reaction in two forms of different states of hydration. Out of experimental evidence we already know that, in general, a primary compound appears as the first stage in the carbonation of calcium compounds out of their alkaline solutions. This primary compound, which was found to be hydrated-$CaCO_3$ and which appears in the form of an amorphous gelatin precipitate having a much higher solubility than that of the anhydrous-$CaCO_3$, may help to understand the "setting" of the carbonate system. The hydrated-$CaCO_3$, together with the anhydrous-$CaCO_3$, form a dual one-way convertible system fulfilling the essential conditions for obtaining a strong precipitate. The hydrated $CaCO_3$ reacts as a primary compound analogous to the unhydrated clinker in the setting of cement and to the semi-hydrate calcium sulfate in the setting of Plaster of Paris.

The solution of this compound causes saturation with respect to the hydrated $CaCO_3$, and simultaneously the solution becomes strongly supersaturated with respect to the transformed anhydrous $CaCO_3$. Hence, a temporary metastable state is obtained in the solution which results in crystallization of the anhydrous $CaCO_3$, leaving the solution again unsaturated with respect to the hydrated $CaCO_3$.* Later, more hydrated $CaCO_3$ will dissolve, and eventually all of it will pass the continuous process of two stages to the final product of a solid crystalline anhydrous $CaCO_3$, fulfilling in this way the optimum conditions for obtaining a strong precipitate.

Investigation of the course of this process shows that it is of an opposite nature to that which occurs in the setting of the regular hydraulic compounds. While the setting of cement and gypsum involves the transformation of a compound from its lower degree of hydration to a higher one, the "set" of the carbonate is described by the conversion from a more hydrated compound to that of a lower state of hydration. Hence, it follows that in contrast to the introduction of uninterrupted additional amounts of water needed for a continuous setting of cement and gypsum, it is essential that water will be continuously removed from the system to enable the continuation of the carbonate "setting." The dissimilarity between the carbonate set and the set of conventional hydraulic materials regarding the stage in which the H_2O molecules enter the reaction need not prevent us from defining carbonate-crystallization as an "hydraulic set". This is due to the fact that water in both cases plays an integral role and incorporates the compound itself at one stage of the reaction. The mere fact that the hydrate state of the compound must be passed in the course of the reaction for obtaining high mechanical strength justifies the definition of the carbonate as an "hydraulic material."

Based on theoretical considerations, as well as experimental data in this field, it can be assumed that the primary substance in the "carbonate set" —namely the hydrated $CaCO_3$—appears in the form of a basic hydrated carbonate, in which a molecule or few molecules of $Ca(OH)_2$ are bound to the compound. This assumption is verified by the results of the following experiment.

Samples of lime putty which were dried at room temperature while completely isolated from CO_2 in the air, possessed after complete drying a certain mechanical strength, although of a very low magnitude. Mixing the same putty before drying with fine carbonate sand of natural origin (i.e., from sea-laid sand deposits) does not change in any way the mechanical strength of the final dried material. However, when fine quarried sand freshly ground and of the same particle size as that of the natural one was mixed with the fresh lime putty, and the mixture was subjected to the same drying conditions, a remarkable increase in the strength of the dried material is achieved.

The interpretation for this phenomenon can be based on the mutual solution of $CaCO_3$ out of the active surfaces of the freshly ground aggregate together with the $Ca(OH)_2$ of the putty, followed by the precipitation of the carbonate. A primary compound is formed consisting of a basic hydrated carbonate

$$(CaCO_3 \cdot xCa(OH)_2 \cdot yH_2O)$$

out of which the less soluble anhydrous $CaCO_3$ is precipitated as the result of supersaturation of the solution with respect to the latter compound. This double staged process is responsible for the remarkable increase in mechanical strength of this mixture.

It is worthwhile mentioning here, although not having a direct connection with the subject, that the above results are of great importance for understanding what happens in concrete made with crushed carbonate aggregates. If the above concepts are true, the crushed carbonate stone will react with the $Ca(OH)_2$ of the cement paste, thereby ruling invalid the assumption that these types of aggregates are inert to cement.

(Continued on page 90)

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Feeders



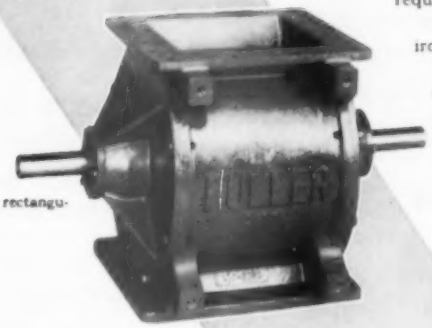
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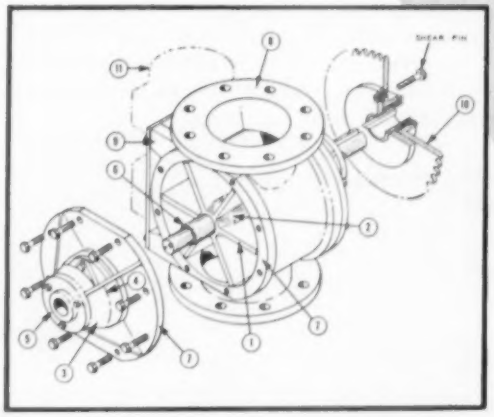
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For complete information write for Bulletin F-5.



Vane type feeder with rectangular flanges.





Vane type feeder with circular flanges. Rigid drive for minimum space requirements. Eliminates drive stress between feeder and related equipment.

Description of drawing above:

1. Six vanes. Two vanes seal between inlet and outlet.
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4. Bearing brackets on sides of packing glands allow free drop of packing gland leakage; prevents material from entering bearings.
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6. Shouldered shaft for externally centering and maintaining alignment of rotor, resulting in equal rotor end clearances and eliminating contact between rotor and headplates.
7. Heavy body walls and headplates. Rigid construction to permit smallest possible rotor clearances. Permits at least one possible remachining after normal wear.
8. Standard companion flange size and bolt circle permits connection to pipe size flanges.
9. Integral cast lugs for drive provides universal mounting for any type motor reducer. Rigid drive for minimum space requirements. Eliminates drive stress between feeder and related equipment.
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. . . with its 40,000-mile interstate system built to increasingly rigid specifications, will see more and more contractors turning to Cedarapids for equipment that's been proved on the Kansas Turnpike for maintaining a profitable production pace in the toughest production conditions.



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Using a Cedarapids Portable Double Impeller Impact Breaker Primary, a scalping screen unit, and a Portable Hammermill Secondary to produce KTA specification aggregate, Reno Construction Company's production ranges between 200 and 250 tons per hour. The Overland Park, Kansas, contractor is operating two Cedarapids Unitized Plants near Aikman and a G60 Bituminous Mixing Plant near Chelsea. Reno owns many other Cedarapids portable units as well as stationary plants.

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Meeting the toughest turnpike specs yet was complicated by extremely difficult crushing conditions. Some native limestone, with 8% moisture content, tends to pack rather than crush. In some quarries, clay topsoil in the material makes it difficult to meet specified PI limits. A common problem was getting rid of the high percentages of dirt and objectional fines encountered.

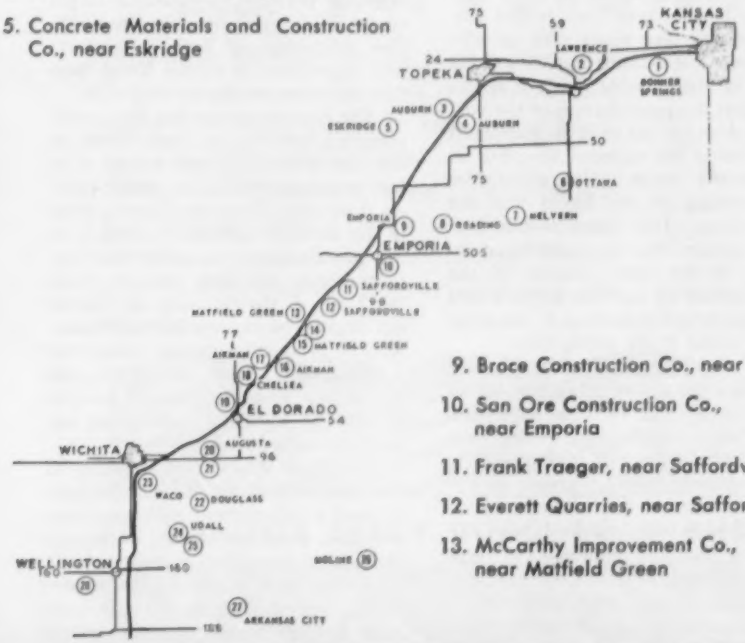
To lick these problems, many contractors turned to *breaking*, instead of crushing, the saturated, rubbery rock with Cedarapids Double Impeller Impact Breakers . . . wasting contaminating fines before primary crushing by use of Cedarapids vibrating grizzlies discharging onto waste conveyors . . . using Cedarapids Portable Screening Units or Screens ahead of secondary crushers to scalp off objectionable fines . . . combining flexible Cedarapids washing equipment to produce clean aggregate.

Kansas Turnpike Aggregate Specifications

Screen	Sub-Base Rock (% Passing)	Base-Course Rock (% Passing)*
2 in.	100	100
1½ in.	100-75	100-70
1 in.	100-60	100-60
½ in.	95-45	
⅜ in.		95-39
No. 4	80-25	75-25
No. 10	65-17	55-17
No. 40	40-8	30-8
No. 200	10-0	10-0

CEDARAPIDS OWNERS ON THE KANSAS TURNPIKE

1. Loring Quarries, near Bonner Springs
2. B. L. Anderson, Inc., near Lawrence
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4. Patton Crushed Stone Co., near Auburn
5. Concrete Materials and Construction Co., near Eskridge
6. Concrete Materials and Construction Co., near Ottawa
7. Dusenbury Quarries, near Melvern
8. Nelson Brothers, near Reading



9. Broce Construction Co., near Emporia
10. San Ore Construction Co., near Emporia
11. Frank Traeger, near Saffordville
12. Everett Quarries, near Saffordville
13. McCarthy Improvement Co., near Matfield Green
14. McCarthy Improvement Co., near Matfield Green
15. Dillon Stone Company, near Matfield Green
16. Reno Construction Co., near Aikman
17. Reno Construction Co., near Aikman
18. Reno Construction Co., near Chelsea
19. George Meyers Inc., near El Dorado
20. Badger Material Co., near Augusta
21. Amis Construction Co., near Augusta
22. Carr Rock Products Co., near Douglass
23. Imperial Paving Co., near Waco
24. H. D. Youngman Construction Co., near Udall
25. Anderson Oxandale Crushed Stone Co., near Udall
26. Concrete Materials and Construction Co., near Moline
27. San Ore Construction Co., Arkansas City
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IOWA MANUFACTURING COMPANY

Cedar Rapids, Iowa, U.S.A.

LIME PUTTY PRODUCTS

(Continued from page 86)

Another phenomenon which helps to confirm the concept of the interaction between the carbonate and the hydroxide compounds at the time of carbonation, and which also indicates that this linkage between the compounds is formed at the very stage of formation of the solid phase, is described as follows.

Carbonated samples of high-calcium lime putty, the carbonation of which was carried out at elevated temperatures, showed a considerable decrease in final strength, this decrease becoming much greater with higher temperatures. From about 30 deg. C. upward any increase in the temperature of the reaction chamber during the carbonation process results in a decrease in the final mechanical strength.

In the attempt to find out the reason for the above phenomenon, it should be remembered that 30 deg. C. is about the critical limit at which changes in the crystalline nature of the carbonate precipitate occur. Up to about 30 deg. C. the carbonate precipitates out of the solution only in the form of hexagonal calcite, while increasing the temperature above this limit results in the formation of rhombohedral crystals of aragonite in the precipitate. The proportion of aragonite in the total carbonate precipitate becomes higher as the reaction temperature increases, until it comprises all of the precipitate at about 60 deg. C. The affinity of calcite to the $Ca(OH)_2$, in the sense of their belonging to the same crystalline group, apparently involves a homogenity of the field of forces at the interfaces of the solid-liquid which results in a better arranged precipitate of higher strength. Hence, it seems that the linkage between the carbonate and the hydrate takes place in an intermediate transitional phase, which is neither solid or liquid. Inside this transition phase the future structure of the solid hydrate, which is still in the liquid phase (where the reaction with the acid compounds of CO takes place), already influences the qualities of the carbonate lattice being formed. It follows that systems of lime putty at their carbonation include molecules of $Ca(OH)_2$ bound to the solid carbonate and in high active state lying as an immediate layer to the solid and which are in a state of transition between the solid and liquid phases.

The explanation of the decrease in strength with the elevation of temperature could be based on the supposition that the hydrated form of the carbonate cannot exist at elevated temperatures, and therefore the "hydraulic set" of the carbonate cannot be achieved. In fact, this supposition is of the same nature as the previous one, and they support each other if we assume that the hydrated $CaCO_3$ is an essential primary compound for the formation of calcite and the failure to obtain it at elevated temperatures yields aragonite in the precipitate. Since only calcite has common crystalline properties with $Ca(OH)_2$, care should be taken to establish moderate temperatures at the reaction chambers in order to obtain high strength material.

The tight linkage between the carbonate and the $Ca(OH)_2$ which takes place at the very stage of the precipitation has apparently been verified by the experiments carried out by the author in which lime putty was carbonated by CO_2 of low concentrations. It was already stated that below a certain concentration of CO_2 the rate of carbonation becomes the function of the concentration. Furthermore, the results of the experiments indicate that the operation curve itself becomes dependent on the concentration of CO_2, in the way that although keeping more or less the characteristic shape, it approaches the axes of coordinates as the CO_2 concentration is reduced.

This brings us to the conclusion that at low concentration of CO_2 the thickness of the liquid layers surrounding the solid particles must be decreased to a certain limit before any reaction can take place with an efficient rate. Referring again to the theory of the "double film", it is obvious that the precipitation of the carbonate does not occur at an accidental plane inside the aqueous film, but at the specific plane which constitutes the interface of the liquid and the solid phases. This supports our previous concept that the solid-liquid interface is the active region of the whole system of the lime putty, where $Ca(OH)_2$ is maintained in a transition phase bound to the precipitate.

The above concepts, although they are based on a very large number of experiments, still leave a wide field for further investigations which may have special economic importance. In the meantime, excellent results involving the practical side of the research have already been obtained, with carbonated building elements of high strength being produced.

Various sizes of building elements—from standard briquettes, regular building block and floor tile up to 5-ft. reinforced beams—were manufactured from mixtures of lime putty and crushed stone, by carbonating them under laboratory conditions as well as using lime kiln stack gases as the carbonating medium. Maximum figures of mechanical strength which have been reached, using hand-work only, are as follows:

Crushing strength:
550 kg./sq. cm. (7800 p.s.i.)
Tensile strength:
48 kg./sq. cm. (680 p.s.i.)
Modulus of elasticity:
375,000 kg./sq. cm. (5,300,000 p.s.i.)
Bond strength to steel:
about 40 percent of the crushing strength

These figures, although being quite a revolutionary achievement, present only the first step in this new branch of building materials. The results will undoubtedly be improved considerably by the advance in the theoretical side of the research, by improving the raw materials and their proportions, and by applying mechanical devices to the production process.

The following are a few of the economic advantages resulting from the use of carbonated lime putties for the production of prefabricated building elements:

1) Lime is generally cheaper than cement, due to simpler manufacturing and lower temperatures involved.

2) The high plasticity and the high "sand carrying capacity" of lime makes it possible to introduce larger amounts of aggregates into the putty. The percentage of lime in mixtures with aggregates is always lower than that of cement in similar materials.

3) The investment needed for manufacturing building elements based on the carbonation of lime putties is of low magnitude due to the simple process it involves. Since the general trend in the modern building practice is to use prefabricated units, the necessity to transport the lime elements from the plant to the building site should not be taken as an economic drawback.

4) The production process takes only a short time. After the carbonation period, the material does not have to go through a curing process and can be used immediately.

5) The high modulus of elasticity of the lime product and its intensive bond to steel reinforcement may save considerable quantities of steel in the production of reinforced members.

6) Owing to its whiteness, carbonated lime products may successfully compete with the expensive white cement prefabricated products.

Acknowledgement

All tests were made at the laboratories of the Technion, Hebrew Institute of Technology, Haifa, Israel. Thanks are due to the president of the Institute for making university facilities available.

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Rolling nearly 33,000 tons of limestone from a solid face

Effective BLASTING Reduces Plant Down Time

READ HOW

. . . M. J. Grove Lime Co., Frederick, Md., uses modified alternate velocity loading and an alternate progressive pattern of delay blasting to get proper fragmentation in pit faces. Minimizing the number of large rocks in a blast keeps crushing plant down time low

By GEO. C. LINDSAY

DRILLING AND BLASTING phases are the most costly in direct charges among all phases of limestone quarrying. Operators try constantly to use the best materials, machines and methods to keep blasting costs low and to obtain maximum benefit in fragmentation under the natural conditions met. The M. J. Grove Lime Co. of Frederick, Md., recognizes also that improper blasting methods may result in high indirect costs due to the need for re-breaking large rocks before they enter the crushing-plant feed. Also, oversize rocks cause costly plant delays when they are contained in plant feed.

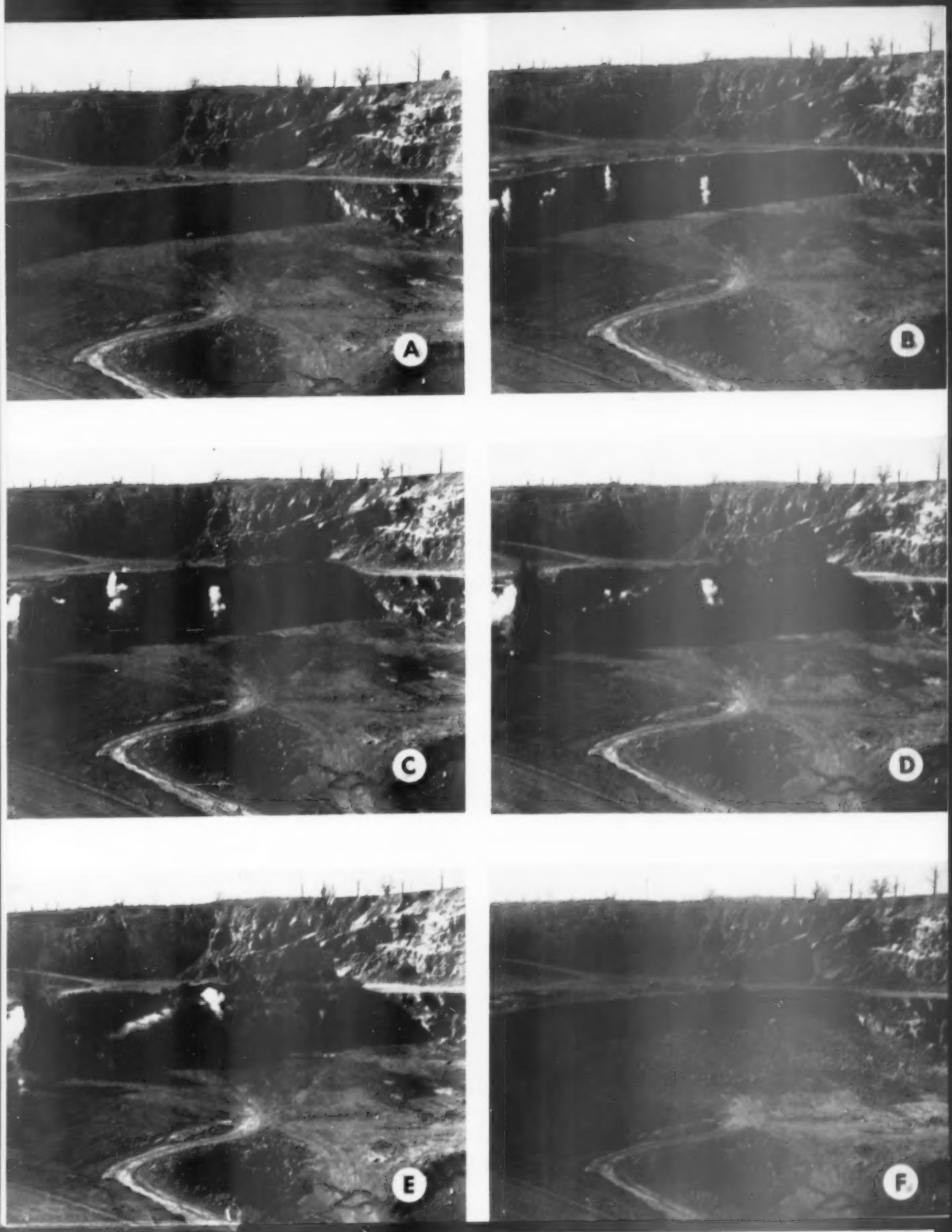
Based on those proven facts, the Grove company has established an effective blasting program that uses the most modern practices developed in the blasting field. A variation of the alternate velocity loading method, in which cartridges of different explosive velocity and force are loaded alternately in the blast holes, is used in combination with millisecond - delay electric blasting caps.

This method allows detonation of each column with a charge composed of both high and medium velocity explosives, the high velocity at the bottom of each hole. Delay type blasting allows the burden to be broken in successive waves. It relieves the restrictive forces of solid burden per hole, and increases the effective forces of the explosives. Explosive waves keep working within the burden to give excellent fragmentation. Another advantage of the method is the ap-

→

Progressive series of photographs of big blast in quarry

PROGRESSIVE VIEWS OF BIG BLAST





Keeping down number of large rock in quarry blasting reduces expensive down-time of the primary crusher

parent reduction of sharp and strong blasting vibrations, which sometimes are objectionable when quarries are located close to populated areas.

A good example of the modern blasting methods used at the Frederick, Maryland limestone quarry of M. J. Grove Lime Co. is a large blast fired December 1, 1955. It consisted of 54 vertical 6-in. holes drilled in one series around the bank face. Spacing between holes was 10 ft., and the burden was 16 ft. The limestone face contained solid rock weighing 165 lb. per cu. ft. Height of the face was 42 ft. Depth of holes was 46 ft. Holes were drilled to a depth slightly below the pit floor to reduce the possibility of leaving a "toe" at the bottom of the face. The blast fired included the breaking of a "toe" that averaged three feet in depth.

All holes in the December blast were drilled with a diesel-operated Drillmaster "down-the-hole" percussion-type drill. The cumulative footage of drill hole shot in the blast was 2484 ft. Drill stems supplied on the drills are 20 ft. in length. Carbon-insert type Depthmaster rock-bits are used.

Annual average drilling speed throughout the quarry is 7 ft. per hr. Average life per bit is 1500 ft. of hole. A portable grinder on each drill is used to grind bits after each has drilled a depth of 75 ft. Experience shows that proportionately less bit material is removed per sharpening with this method, and that drilling performance is increased. A 600-p.s.i. compressor on the drill provides air for removing drill cuttings. A dust collector on each drill collects cuttings, which are used as stemming material in blast holes.

The "toe" at the bottom of the bank face in the shot described was drilled with a diesel-powered percussion-type wagon drill. Holes, 2½ in. in diameter each, were spaced on 16-in. centers and were drilled horizontally to an average depth of 16 ft. to the vertical bottom of the bank face.

Use of a varied velocity charge of explosives in the drill holes is standard practice at Frederick quarry. Loading of the 54 holes in the December blast was unusual in that three types of explosives were used in each hole in a specified pattern. Loading of each hole was identical.

A 4½-in. x 16⅔-lb. cartridge of 75 percent Giant Gelatin explosive went into a 46-ft. hole first. It was fitted with a Rockmaster Twinplex double-wire double cap as a safety factor. Then, a 4½-in. x 16⅔-lb. carton of Apex 4MV (medium velocity) explosive was opened and the contents poured into the hole. Loading by the alternate method continued until 100 lb. of each type of explosive were in place. Five or six cartridges of 4½-in. x 16⅔-lb. 60 percent Giant Gelatin were added to each hole to top the charge. The top 15 feet in each hole were filled with rock cuttings as stemming material.



Diesel-powered vertical percussion-type drill made 54- 6-in. diameter holes for big blast

Total amount of explosives charged in the 54-hole blast was 15,500 lb. The charge contained 5000 lb. of 75 percent, 5000 lb. of 60 percent, and 5500 lb. of Apex 4MV explosives. The calculated tons of rock broken by the blast was 32,778, which provided a ratio of 2.12 tons of rock per pound of powder used. The average ratio for company operations at Frederick quarry in 1955 was 3:1. These data do not include the powder used to break the "toe" at the base of the bank face. Each horizontal hole in the toe of the December blast was charged with 25 pounds of 60 percent dynamite in 1¾ x 12-in. sticks. No delay caps were used in these charges.

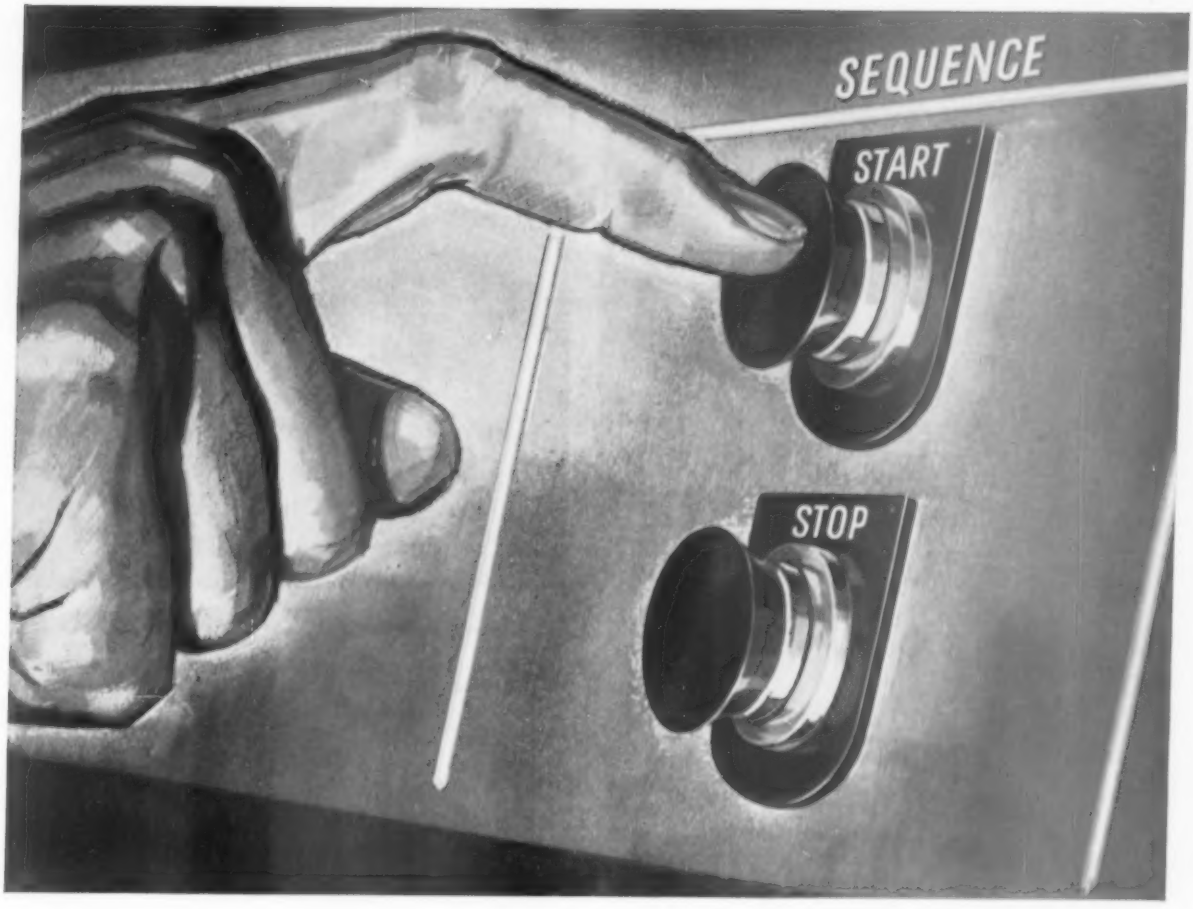
Delay-type detonation was used in the main charge to obtain the maximum explosive effect of the charge in each hole. Millisecond delay caps in types from No. 1 through No. 8 were used. They were arranged in an alternate progressive pattern in holes along the entire length of the shot; i.e., 1-2-3-2-3-4-3-4-5, etc. Only a slight variation was made at places along the bank face where variation in the pattern was considered necessary for maximum blasting effect.

Holes were connected to a 14-gauge plastic-covered copper-wire trunk line that was installed along the holes on the surface for the whole length of the shot. The 54 holes were divided into three series of about 18 holes each to reduce resistance. Each series of holes was balanced by galvanometer, and each was connected to the trunk line by a feeder line. Also, ends of each series were connected. A Shotmaster multi-shot push-down type generator was used to set off the blast.

Holes in the toe of the face and also a charge placed in a large boulder were connected to the main trunk line. Instantaneous blasting caps were used in each, since it was desired to break the boulder and the toe prior to breaking the main face.

The charging-detonation plan used at Frederick quarry is effective. It is the Grove company's policy to break the stone in each blast as much as possible with the least powder cost. Blasts that produce low muck piles with few or no large rocks or boulders are desired. High muck piles, particularly

(Continued on page 98)



Got a job for the Batchetron?

Here's what it will do. Operating electronically from a remote control station, the Fairbanks-Morse Batchetron can be preset with knobs and buttons to assemble accurate quantities of dry and liquid components from any one or more bins or tanks. The cycle of mix is also preset, and the actual batching takes place at the touch of a button.

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The Batchetron is . . . Fairbanks-Morse electronics instrumentation plus accurate weighing in the Fairbanks-Morse tradition. There is a new bulletin, No. ED-14, on the Batchetron with many suggested applications which may fit your process operations. Send for it today. Fairbanks, Morse & Co., Dept. RP-9, 600 South Michigan Ave., Chicago 5, Illinois.



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Above: Steel shoes with rubber grips are fitted at the ends of straps which extend across the belt and rest on the driving ropes. Weight of the material on the belt causes the straps and belt to take a troughed form

Left: Cable belt conveyor trial installation at a coal mine

Cable Belt Conveyor For Slag and Coal

By JOHN GRINDROD

CLAIMED to be one of the most economical means for moving large quantities of suitable materials over long distances and up steep inclines at low cost is a new-type cable belt conveyor, invented by Charles Thomson. It is being developed in Scotland by Cable Belt Limited, of Inverness.

Differing in a number of ways from the orthodox belt conveyor, the new belt conveyor depends for its drive on two steel ropes while the belt itself acts only as a carrier. Instead of the belt taking the driving pull, this is borne by two steel ropes, one on each side of the belt, through two driving pulleys mounted on two half shafts driven through a differential to insure equal torsion and driving speed. The ropes are supported along the entire length of the conveyor by ball bearing pulleys set at approximately 18-ft. centers.

How Belt Load Is Carried

Of 32-oz. cotton duck, single-ply construction, the belt has spring steel straps molded into it at approximately 2½-ft. centers, depending upon the width of the belt and the weight per cubic foot of material to be carried. The straps extend across the belt and project at each side for a few inches, shoes with rubber inserts being fitted at each end in such a way that they can slide on the strap for a limited distance. These shoes and inserts sit on the ropes and cause the weight of the material on the belt to be transferred directly to the ropes, the straps and belt taking the form of a trough. In this way the shoes, straps, belt and material on the belt travel as one unit with the driven ropes. Being proportional to the weight of the material on the belt and representing a combination of friction and the bite of the rubber inserts into the interstices between the wires of the ropes, the grip of each shoe on the rope is, under working conditions, greater than the grip of the material on the belt and no slip occurs between shoe and rope.

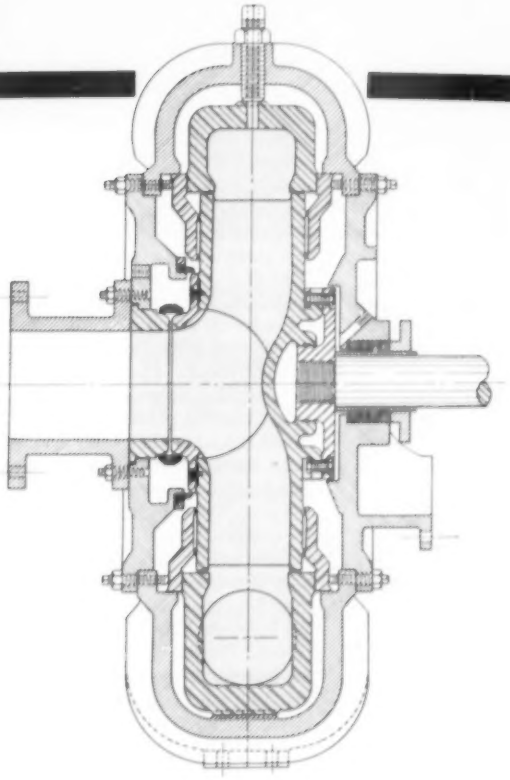
The belt is supported by the straps and shoes on the steel ropes on both the carrying journey and on the return empty journey, an ingenious device being used for transferring the shoes at the terminal drum, which involves the use of two skewed pulleys. At this transfer point each rope passes back to and is guided round a skew pulley, then forward to the driving pulley after which it returns immediately in line with and underneath the shoes at the transfer point at the bottom of the delivery drum. Here, the shoes, being made alike top and bottom, transfer automatically on to the returning rope and are carried back to the loading end, where a similar transfer takes place in reverse.

Synchronizing the speed of the two ropes is accomplished without any electronic speed synchronizing or hydraulic torque-balance gear by mounting the two driving pulleys on two half

The Case Of The LOST TOOLS!

THOMAS PUMP USER LOSES WRENCHES BECAUSE HIS PUMP NEEDS NO REPAIRS!





Cross-section shows in yellow the "guts" of a THOMAS PUMP, (all parts here assembled into a unit) made of Thomas NI-HARD ALLOY ..... the most durable, long lived, economical sand and gravel pump ever manufactured.

One of our Service Engineers recently called upon a sand and gravel producer to check up on his Thomas Durable Dredge Pump. This Thomas Pump had then been in use under severe conditions for several months, and our engineer inquired about its condition. An ordinary pump under the same circumstances would need to be shut down for repairs quite frequently.

When our engineer asked about the condition of the pump, the Operator said he didn't know—they had never looked into it because it still was operating as good as ever. The Service Man said he'd like to examine the pump and asked for wrenches and tools. After a search, the Operator said:

"We had some tools around here that would fit this pump, but we have never needed them and they seem to be lost. That never happened with our other pump because we needed those repair tools mighty regularly."

Moral: If you do it with a dredge pump, you can do it better with a Thomas. Thomas Pump performance is due to its unique design and the genuine NI-HARD alloy from which it is made.

YOU CANNOT BUY, AT ANY PRICE, A MORE DURABLE PUMP FOR SAND AND GRAVEL–YOU CANNOT BUY ONE THAT WILL MAKE YOU AS MUCH MONEY.





THOMAS FOUNDRIES Inc.

P. O. BOX 1111, BIRMINGHAM, ALABAMA





Enter 1394 on Reader Card

shafts and using a differential gear. Sufficient rigidity is available with a single-ply belt in a conveyor only 250 yd. long to control the differential and to cause the two driving pulleys to rotate at speeds relatively proportionate to any difference in diameter of the two driving wheels.

The cable-belt conveyor is said to run very smoothly at normal belt speeds. Supporting pulleys are spaced at much greater distance than the spacing of idlers in normal belt conveyors. At the tail end and where tension in the ropes is least, the spacing of the supporting pulleys is shorter than at the head end where tensions in the ropes are greater. This applies to the top or carrying ropes while pulleys for the return ropes are spaced alternate to these.

Supplied in 50-yd. lengths, the various belt sections have been made with molded joints on the tongue-and-groove principle; a spring-steel strap, similar to the ones molded into the belt, being driven through the molded slot at the end of each section.

An advantage claimed for this type of conveyor is that since the strength of the belt required does not depend on the horsepower of the conveyor, the same belt can always be used for the same material. Also, whereas Grade A conveyor belting used in England has a tensile breaking strength of 3500 p.s.i., the breaking strain for first grade steel wire ropes is 100 to 110 tons. It is claimed that this increased tension strength opens up new fields for the use of belt conveyors for materials handling problems.

Another advantage lies in the fact that continuous belting is not always necessary as is the case with orthodox conveyors. To negotiate sharp bends in the horizontal plane two separate belts can be used, one for each leg of the bend.

EFFECTIVE BLASTING

(Continued from page 94)

those that contain large rocks near the top, provide danger to the loading operation through the possibility of boulders rolling or falling. Production of large rocks in blasting is expensive, since it is necessary to break them with ball drops before they can be delivered to the primary plant crusher. Of great importance to management is the elimination of plant down time caused by oversize rocks in the plant feed. Work stoppage due to that cause is expensive, and the desire to reduce or eliminate it was a basic incentive to establish an effective blasting program at the Frederick quarry.

The blast set off there this past December is considered by explosive experts to be one of the most effective shots produced in such work. It was the result of research and experiment conducted by the company in conjunction with Harry Bankes, Atlas Powder Co. representative.

The combination of modern methods in blasting techniques produced an excellent shot. The muck pile produced was low and was prepared for ease and safety in loading. Fragmentation was good. End break and back break were about 12 ft. each. The blast produced the desirable factor of concentrating the explosive forces at the bottom of the face to eliminate a toe at the base of face. Toes are expensive to handle.

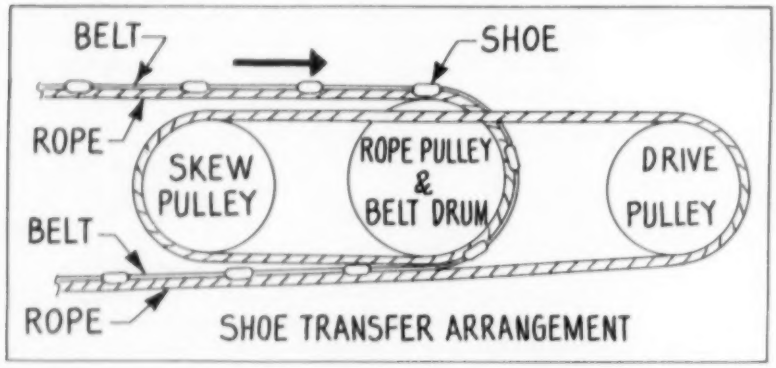
The primary blast, with varied velocity loading of the charges and the alternate progressive use of millisecond delay caps, kept the explosive forces at work within the burden at desired efficiency. Such action makes possible the use of lower-strength explosives, and thus lowers explosive costs. The churning and swelling action in the main blast was particularly effective in reducing the number of large rocks produced. Production of few or no oversize rocks eliminated costly quarry and plant production problems. Use of delay-type blasting has materially reduced vibration. There were no complaints received after the large 15,500-lb. blast was fired.

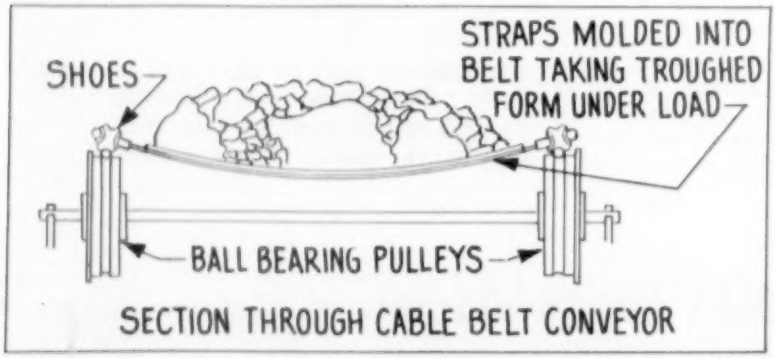
Main offices of the M. J. Grove Lime Company are at Lime Kiln, Maryland, six miles south of Frederick on Route No. 15. The company operates quarries and plants at Stephens City and Middletown, Va., and at Frederick, Md.

Frederick office is southeast of the city of that name, in Frederick County, Maryland. The operation there consists of a limestone quarry, limestone crushing plant, lime plant, ready mixed concrete plant, and a small concrete block plant. Normal output of limestone at Frederick is 600,000 tons per year. Virtually all of it is produced for construction purposes, and a large portion enters state and county projects. Stone is produced in graded sizes from Maryland base stone (minus 3½-in.) through Maryland No. 10 (minus ⅜-in.). During 1955, 65 percent of the limestone aggregates used in construction of U. S. Route 40 between Frederick and Baltimore and for U. S. 240 between Frederick and Rockville, Maryland, was supplied by the Frederick plant.

Robert B. Crothers is president and W. Jarboe Grove is executive vice-president of M. J. Grove Lime Co. F. Grove White is vice-president and manager of the Stephens City and Middletown, Va., plants.

James H. Grove, Jr. is manager of the Frederick plant. Homer J. Harvey is superintendent at Frederick. He has served the company for many years, and all drilling and blasting work comes directly under his supervision. Bayard Rosencrantz is stripping and blasting foreman.





Cross section showing details of cable belt conveyor and the shoe transfer arrangement

Enter 1328 on Reader Card



Why Falk Gears cost less per year of service

Experienced mill and kiln operators and engineers know that annual gear expense is determined by many factors besides the initial cost of the gears themselves. Among these factors are: tonnage handled, efficiency, and effect of gear operation on driving and driven machinery, shutdowns caused by gear failures or pinion replacements—and the service life of the gears.

By any, or all, of these standards, Falk Helical Gears are the most economical gears you can buy! They are *correctly designed, engineered and built* for highest accuracy, thanks to Falk's long and unmatched experience. All gears are *precision-hobbed* on machines designed and built by Falk. Each gear has a serial number; its pedigree is established during its course through the several shops and the many operations and tests to which it is subjected.

Repeated tests have proved that Falk Helical Gears have an efficiency of 98½% or greater—the highest obtainable!

These gears, with the smooth operation of their extra-capacity teeth, provide maximum resistance to abrasive wear—hence longer life, not only of the gears, but of driving and driven machinery. This means multiple savings for you.

Falk is the country's largest supplier of precision gearing...and has unsurpassed facilities to fill all your gear requirements.

Contact any Falk Representative—also, write for
Engineering Report 6170, "Advantages of Helical Gearing"

THE FALK CORPORATION, 3001 W. CANAL ST., MILWAUKEE 1, WIS.

FALK HOBBED GEARS FOR IMPORTANT CEMENT MILLS

The 2000 hp helical gear in the small photograph above is one of six destined to drive important cement mills, probably the largest mills built to date.

All Falk Helical Gears, both single and herringbone, are precision-hobbed on special Falk-built hobbers of highest accuracy. Falk gear hobbers have incorporated in the design of the gear train a mechanism which is extremely effective in reducing tooth-spacing errors to negligible values. The accuracy inherent in the machines has the salutary effect of insuring perfect load division between the several teeth that are simultaneously in contact in helical gears.

Finish hobbing is done in a room where the temperature is controlled within a variation of two degrees. This is a precaution against possible dimensional changes of the gear during the all-important finishing operation—changes which might affect ultimate accuracy.

FALK

...a good name in industry



Electrified for continuous high speed production... the AUSTIN-WESTERN 61-E crushing and screening plant

Here's a single pass, portable crushing and screening plant that operates continuously at *full production speed* to deliver a constant flow of uniform product at low operating cost. It's the Austin-Western 61-E . . . *electrified* to make it the perfect plant for contractors, counties or townships . . . on big jobs or small.

Individual electric motors (powered by a diesel driven generator) operate feeder, conveyors and double deck screen through short-coupled V-belt drives. There's no mechanical loss from inefficient gear boxes and open chain drives. The result is maximum operating efficiency for low-cost, high-volume production.

What's more, the 61-E plant is easy to move, simple to operate and maintain because of design and construction extras like these:

- No jacks are required because the heavy welded frame and dual rear wheels give complete stability.
- Push button electric operation eliminates clutches and clutch control levers.
- Electrical hook-up is simplified by using standard motors and control units, and by the elimination of complex wiring systems.
- The single-jaw crusher operates at high speed because it is supported on a heavy forged chrome-vanadium steel shaft mounted in over-sized self-aligning bearings.
- Positive protection against uncrushable material is assured by machined toggle plates in the crusher.

It will pay you to see this plant for yourself at your nearby Austin-Western Distributor. Or, to get detailed information, send for our new 61-E booklet containing complete specifications. Write Construction Equipment Division, Baldwin-Lima-Hamilton Corporation, Lima, Ohio.

Optional equipment like this new Portable Bin and Screen Unit, ideal for producing specification material, makes the 61-E one of the most versatile plants available.



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CRUSHING, SCREENING & WASHING EQUIPMENT

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Construction Equipment Division — LIMA WORKS

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AMERICAN STANDARDS — American Standards Association has released a new "List of American Standards" indexing 1600 standards. About 275 are in the field of civil engineering and construction and include building and plumbing codes, test methods and specification for building materials of all types, fire tests, and safety precautions in construction.

Enter 600 on Reader Card

AUTOMATIC BAGGING SCALE — Richardson Scale Co. has released Bulletin 6041, describing the "Weighblender," a new automatic bagging scale designed for the pre-mix concrete industry. Features discussed include feeding arrangements, operation, bagging rates, and specifications.

Enter 601 on Reader Card

BAR GRIZZLY—Nordberg Manufacturing Co. has issued Bulletin 261, a 4-page brochure describing the Nordberg-built Symons vibrating bar grizzly, a high-capacity scalping unit for large tonnage operations.

Enter 602 on Reader Card

BATCH LIFT — Burmeister Co. has released a bulletin on "Weighmeister," a screw-action batch lift with self-contained automatic controls. Specifications are included.

Enter 603 on Reader Card

BLOCK MACHINERY —Bergen Machine and Tool Co., Inc. has published its "Better Equipment" Supplement No. 1, which covers new items of equipment added to the Bergen line for block plant operations.

Enter 604 on Reader Card

BLOCK SPLITTER — Precision Machine Works has prepared a leaflet describing its new block splitter. Weighing less than 1000 lb., the unit is table-mounted on springs with automatic block stops. Four segregated blades on both top and bottom jaws permit adjustment to form of block and equalizer-adjustment pressure stabilizers allow equal blade pressure. Spacers adjust blades to cut block from 1⅝- to 8-in. wide.

Enter 605 on Reader Card

CENTRIFUGAL DUST COLLECTOR — Research-Cottrell, Inc. has issued a bulletin on Cyclo-trell multiple-tube dust collector which operates on the centrifugal collection principle. The 12-page illustrated bulletin explains the operation and construction, shows cutaway views, and gives tables and nomographs for the six sizes available.

Enter 606 on Reader Card

CONTINUOUS CONCRETE PIPE — No-Joint Concrete Pipe Co. has published a manual containing general information, specifications, and design and test data on No-Joint concrete pipe.

Enter 607 on Reader Card

CONVEYORS—J. C. Corrigan Co., Inc. has prepared an 8-page booklet, "Helpful Information", describing the company operations in "start to finish" conveyor service for the handling of bulk or packaged materials.

Enter 608 on Reader Card

DRY PROCESSING EQUIPMENT—Sturtevant Mill Co. has released an 8-page booklet "Sturtevant Dry Processing Equipment". The book stresses the accessibility of vital parts of all Sturtevant units for inspection and maintenance purposes, and explains the company's cooperative engineering plan. Specifications and photos of production equipment and laboratory units are included.

Enter 609 on Reader Card

DUST AND FUME CONTROL—American Wheelabrator and Equipment Corp. has issued Catalog 72-B on solving dust and fume problems with Dustube Collectors. The catalog contains information on design features, capacities, dimensions and applications.

Enter 610 on Reader Card

FLUID DRIVE — American Blower Corp. has released Bulletin 9719. This two-color bulletin describes size 126 Type T Gyrol fluid drive for general industrial application. It also discusses construction features and includes photographs and an installation type drawing, giving basic dimensions and tolerances.

Enter 611 on Reader Card

FORK LIFT TRUCKS — Towmotor Corp. has published a pocket-sized operator's manual covering the specifications and construction features of Towmotor lift trucks and accessories, operating instructions and proper handling techniques. The Spring issue of Handling Materials Illustrated has also been released. It deals with mass-handling of atomic waste.

Enter 612 on Reader Card

GEARS—The Cleveland Worm and Gear Co. has published Form 521: "The ABC's of Speed and Cost Reduction". Examples of long service by Cleveland worm gear drives are given, and a number of standard types in the line are shown.

Enter 613 on Reader Card

HEAVY-DUTY TRUCKS — International Harvester Co. is offering Catalog CR-674-F on International four-wheel conventional and cab-over-engine heavy-duty trucks with six-cylinder engines. Gasoline, liquefied petroleum gas, and diesel-powered models are covered.

Enter 614 on Reader Card

INDUSTRIAL ENGINES—Willys Motors, Inc. has released a brochure describing the 1956 line of "Jeep" 4-cylinder industrial engines and power units. Suggested applications for engines and units are included in the brochure.

Enter 615 on Reader Card

INDUSTRIAL FLOORS — Klemp Metal Grating Corp., has released a report on Hexteel and Floorsteel heavy-duty steel floor armors. This report contains several pages of data tables, filler weights, specifications, illustrated installation procedures, and specialized uses of steel floors designed to stand up under heavy traffic conditions.

Enter 616 on Reader Card

INDUSTRIAL TRUCKS — Elwell-Parker Electric Co. has published a brochure commemorating its 50th year of industrial truck production. It contains information on its six new lines, including its low headroom fork lift truck series, high lift platform trucks, die handling truck series, stand-up, center control fork trucks, and gas-powered low-lift platform truck series.

Enter 617 on Reader Card

LIGHTWEIGHT AGGREGATES—Bureau of Mineral Research, Rutgers University, has published a bulletin on the commercial production of lightweight aggregates for use in concrete. It covers the availability of New Jersey raw materials — shales, slates and clay. Maps showing the locations of deposits, results of sintering and expanding tests, and properties of the lightweight aggregates have been included.

Enter 618 on Reader Card

MASONRY DRILL — Pennsylvania Drilling Co. has issued Brochure A111 on Pendrill Models E drilling units for masonry including reinforced concrete. The leaflet contains illustrations on the portable unit that will drill vertically, horizontally, or at an angle. Model ER drills vertical holes, designed primarily for drilling in connection with cellular metal floors.

Enter 619 on Reader Card

METALLURGICAL EQUIPMENT—Western Machinery Co. has released a 4-page catalog of its complete line of equipment and services for mines, mills, and process plants. Described are principal units with specifications as to sizes and capacities, as well as laboratory testing services and engineering, design, and construction facilities available.

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FREE INFORMATION

You can obtain catalogs and literature listed on these and other pages of the magazine by entering the number appearing either below or beside the item of interest on the READER-SERVICE CARD at the bottom of this page.

POWER DIGGER — Sherman Products, Inc. has released a brochure on Sherman Major Power Digger, a new hydraulic backhoe, designed specifically for attachment to Fordson-Major tractors.

Enter 621 on Reader Card

POWER SOURCES — Lincoln Electric Co. has issued a catalog of power sources for automatic welding applications. Bulletin SB-1358 15M 6/56 contains specifications for its complete line of a.c. and d.c. welding power sources.

Enter 622 on Reader Card

PRESSURE PIPE — Johns-Manville has published a guide to the installation of Johns-Manville Transite pressure pipe for overhead industrial water and process lines. The 48-page manual includes diagrams of typical systems.

Enter 623 on Reader Card

RADIATION PYROMETRY — Leeds and Northrup Co. has issued booklet EN 33B "Temperature Measurements with Rayotubes." It covers radiation pyrometry, its history, types of pyrometers, and optical systems used. Another booklet ENT(1) is an index of free L&N publications describing products for research, industrial temperature and electrical measurement, continuous recording, and electric and pneumatic process controls.

Enter 624 on Reader Card

RECONDITIONED MACHINERY—Morse Bros. Machinery Co. has issued Bulletin 561 on reconditioned machinery. The illustrated bulletin gives detailed specifications of used mining and milling machinery, electrical, industrial and construction equipment.

Enter 625 on Reader Card

REMOTE CONTROL SYSTEM — The Sparks-Withington Co., Sparton Controls Systems Division, has released a brochure covering Sparton remote control system for two-position discreet operation of starters, pumps, valves, loaders, gates and mechanical operators.

Enter 626 on Reader Card

SINGLE-STAGE TORQUE CONVERTER —Twin Disc Clutch Co., Hydraulic Division, has released Bulletin 508 describing the new 1500 Series Single-Stage Torque Converter. Included are illustrations and tables on the single-stage converter fluid circuit, horsepower and r.p.m. capacity, and specifications.

Enter 627 on Reader Card

SOIL TESTING EQUIPMENT — Soiltest, Inc. has issued a 1956 catalog containing descriptions and illustrations of over 1350 items for engineering tests of soils, concrete, asphalt, and construction material.

Enter 628 on Reader Card

TIME RECORDER — Calculagraph Co., Inc. has released a circular on Model 141 electrically driven Calculagraph which automatically prints elapsed or working time. Photographs and diagrams are included.

Enter 629 on Reader Card

TRACK PERFORMANCE — Caterpillar Tractor Co. has published a brochure, "The Right Track," on track development and performance. The 8-page booklet, Form 31957-DE622, discusses track construction, link design, shoes, bolts, pins and bushings.

Enter 630 on Reader Card

TRACTOR REPLACEMENT PARTS — American Brake Shoe Co., American Manganese Steel Division, has prepared a pamphlet on Manganese Steel tractor replacement parts. The folder illustrates the advantages of manganese steel in track shoes, scraper blades, end bits, sprocket and idler rims, and grouser bars.

Enter 631 on Reader Card

TRUCK AND TRAILER RESTRICTIONS —The Four Wheel Drive Auto Co. has published a reprint of its brochure, "Truck and Trailer Size and Weight Restrictions." This brochure lists the restrictions in each of the 48 states and the District of Columbia.

Enter 632 on Reader Card

TRUCK SHOVELS — "Quick-way" Truck Shovel Co. has released Bulletin 556 describing "big crane-shovel" features in Quick-Way Models 125A and 105A. Attachments and carriers are also listed. Bulletin 356 is devoted to Model 125A, and Bulletin 456, to Model 105A.

Enter 633 on Reader Card

TUNNEL CONCRETING — The Master Builders Co., subsidiary of American-Marietta Co., has released Reporter No. 8 covering 12 major tunneling case histories. Each case is a report of the excavating and concreting problems encountered and solved on these projects. Pozzolith concrete was used in each case discussed.

Enter 634 on Reader Card

TURBINE PUMPS — Layne and Bowler Pump Co. has published a full color bulletin (600) on enclosed lineshaft Verti-Line turbine pump with abrasion-resistant features. The bulletin describes new Perihedral impeller sealer that increases field efficiency and new dual-bowl bearing to combat abrasion. It has a full length pump illustration with cut-away section.

Enter 635 on Reader Card

VIBRATION AND SHOCK CONTROL — Lord Manufacturing Co. has announced a new booklet containing a vibration isolation efficiency curve printed in three colors. Bulletin 901 is a guide to the selection of flexible mounting systems for equipment where noise and vibration control is desirable.

Enter 636 on Reader Card

WELDING EQUIPMENT — Modern Engineering Co. has announced its 1956 revision of General Welding Catalog 150 covering a complete line of MECO oxy-acetylene welding and cutting torches, machine cutting torches, regulators, pressure gauges, hose connections, couplings, and safety equipment.

Enter 637 on Reader Card

WINCHES — Gar Wood Industries, Inc. has announced a catalog for both its truck-mounted and stationary winches. Single and double-drum winches, ranging from 7000 to 100,000 lb., are illustrated and described. Also included are drawings and specifications for possible shaft combinations with standard power takeoffs.

Enter 638 on Reader Card

WIRE FABRIC REINFORCEMENT — American Road Builders Association has released Technical Bulletin 217 on the use of welded wire fabric reinforcement in concrete pavements. The bulletin was prepared by Wire Reinforcement Institute, Inc.

Enter 639 on Reader Card

WIRE ROPE — United States Steel Corp., American Steel and Wire Division, has published Form 6510, describing and illustrating Tiger Brand wire rope, strand and fittings. The booklet also includes directions for the handling and care of wire rope.

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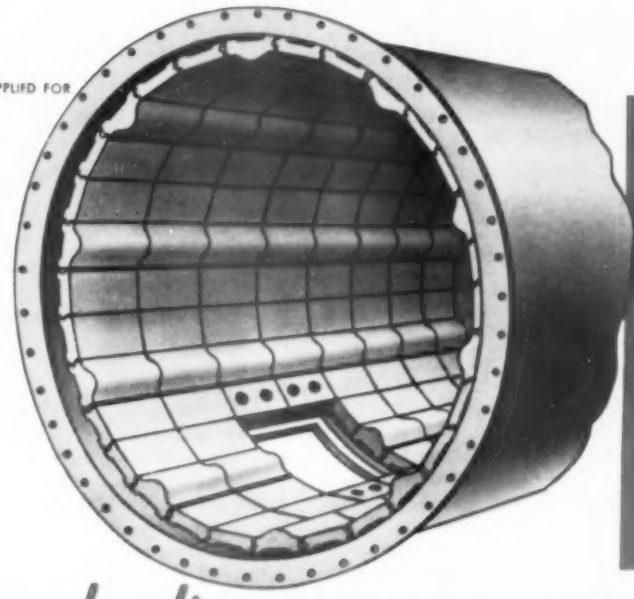
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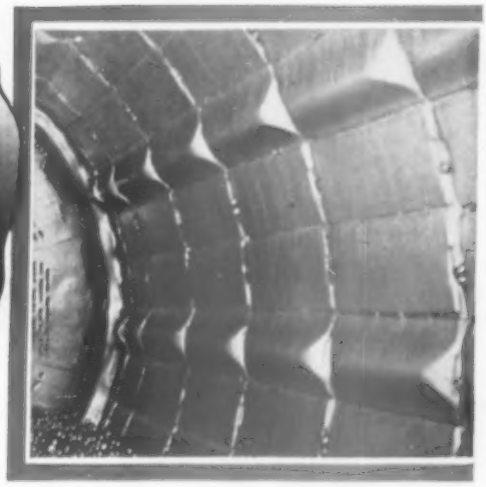
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Standardize WITH B&W UNIVERSAL LINER PLATES

SAME CASTING FITS ALL MILL SIZES
B&W LINER PLATES RAISE PERFORMANCE, LOWER COSTS

The new B &W Tube Mill Liners have advantages that mean reduced costs in capital, time and labor.

Cost per ton of material ground is reduced, for the practical reasons listed below. Check them—you may find that one, or a combination, of these qualities will solve your existing problems.

- Lower Initial Costs—No pattern and chiller costs —the result of standardization.
- Longer life of liners—Uniform wear will result from better quality control on a mass production casting, utilizing permanent molds. Size is ideal for uniform chill and heat-treatment.
- Longer life for different applications can be realized by a selection of proper materials. This design lends itself to either chilled irons or wear steels.
- Direct labor cost and the "down-time" to install the liners are reduced. Castings are easily handled due to small size and weight. Less fatigue of workers. No cranes needed to handle lightweight liner castings.
- Cost reduced for storage space. Minimum storage space required as small castings "stack" easily. Records simplified with one design of casting interchangeable for all size mills.
- Saves money on liner inventory. One design fits all diameters of mills, permitting standardization. Quicker unloading and storage possible.
- Savings in breakage claims and delays for replacements. Hard brittle irons are frequently broken in shipment when large castings are used. Small castings are rugged and almost impossible to break by handling.
- Savings in determining most efficient wear pattern. Same castings will produce wear profiles consisting of all lifter ribs, all flats or combination of both, including straight or spiralled lifter pattern.

Liners are supplied in two nominal thicknesses, 1½″ and 3″ with 1½″ high lifters. Castings are 6″ wide x 12″ long. Positive seating of small castings on mill shell means less breakage of castings under operating conditions. For additional information on B&W Universal Tube Mill Liner Plates, write The Babcock & Wilcox Company, Process Equipment Department, Barberton, Ohio.

BABCOCK & WILCOX

BOILER DIVISION

S-464

Enter 1346 on Reader Card

N.C.S.A. Directors Change By-Laws



J. R. Boyd, executive director

• Lake Placid, N. Y. meeting of Board of Directors, National Crushed Stone Association, also discusses plans for 1957 convention and committee reports

THE BOARD OF DIRECTORS, National Crushed Stone Association, has changed its by-laws to provide for the election of a vice-president, has made former administrative director J. R. Boyd its first executive director, and has shifted housing plans for its 40th annual convention to be held in Miami Beach, Fla., next January. The latter change involves a shift to a new convention group involving seven hotels that differ from the group of hotels formerly announced to house the convention.

Those and other important items of business were discussed and acted upon during the mid-summer meeting of the N.C.S.A. board at Lake Placid Club, Essex County, New York on July 12 and 13. Nearly 100 people attended the meeting, including board members, representatives of the Manufacturers' Division, Washington headquarters staff officials, wives and children. N. E. Kelb, president of the association, presided at the two-day session.

Committee reports were presented on percentage depletion by Russell Rarey; public relations by W. P. Foss, III; and subrogation by Warren C. Rowe. Much progress has been made by the latter committee in solving the serious problem of subrogation. Additional meetings have been held with groups of insurance men and with the National Board of Fire-Underwriters, in further attempts to acquaint insurance men with the facts involved in vibrations produced by quarry blasting. John F. Lane of Gall, Lane and Howe, general counsel for the association, discussed in detail the significance of the Virginian Limestone case decision.

Formerly, claims against producers for alleged damage from blasting have been paid by insurance companies without full knowledge of blasting techniques and possible resulting limits of damage due to the vibrations produced. It has been the opinion of the N.C.S.A., with the subrogation committee carrying the ball, that insurance companies and quarry operators would benefit from an educational program directed to the insurers.

Cooperation by the insurance companies has been excellent, and the committee reported that the National Board of Fire-Underwriters had issued a temporary instruction booklet for adjusters handling alleged claims for damage from quarry blasts. The new manual, which is expected to be final and to be made available soon, is believed to represent great committee progress in its valuable work.

The committee on percentage depletion, headed by Mr. Rarey, reported that no action had been taken on bills before Congress, so that committee action has not been necessary. It is believed that current percentage depletion bills now in the Congressional hopper have little or no chance of passing either House, at least this session.

W. P. Foss, III, chairman of the public relations committee, submitted a progress report. On the basis of information being sought through a questionnaire, a further report will be made at the next meeting of the board.



Jos. E. Gray, engineering director

The association's by-laws were amended on a recommendation by the executive committee to the board of directors made this past April. Changes in the by-laws permit a greater number of deserving members to serve as president, and will provide an opportunity for more training of a prospective president through the new office of vice-president.

Staff reports were given by A. T. Goldbeck, retiring engineering director, J. E. Gray, formerly field engineer succeeding Mr. Goldbeck, and J. R. Boyd, administrative director.

Mr. Goldbeck, in his last official appearance before the board, reviewed the numerous activities of the engineering director for the year ending July 1956. His report covered two troublesome problems that he had discussed a year ago—alkali-aggregate reaction and pavement slipperiness.

More than 50 research projects have been conducted by the laboratory this past year. Special activities of the engineering director since the 1956 mid-summer board meeting included more than a dozen special meetings and inspections. An important activity of Mr. Goldbeck's was his service as chairman of the American Road Builders' Association Task Force No. 2 on Materials and Supplies, which did a creditable industry job.

J. E. Gray, who has been named to succeed Mr. Goldbeck as engineering director, reported on his activities as field engineer. Mr. Gray, who has been with the association for 28 years, pointed up three major problems that he continues to encounter in his extensive travel in the field. He covered the apparent rapid growth in output of stone from so-called portable plants. With increased demand for aggregates and rising transportation costs, the possibility for growth in quantity of this type of stone is great.

Mr. Gray also emphasized the need for continued research on aggregates

(Continued on page 120)

Enter 1331 on Reader Card



"Maneuverable . . . that's why we bought it," says contractor

Much of the material to be moved is trap rock, one of the hardest stones in New England. Three-layer, all-steel, grid-type bowl with tool-steel floor resists shocks of loading. Big, wide bowl opening with low rear entry, is an easy target for this 2-yard shovel.



After one of New England's disastrous hurricane-floods, this Tournapull Rear-Dump took Civil Defense officials on a survey of damage in the area. It was the only unit in the area that could safely drive through the high water. Tournapull also helped to haul 270,000 yards of borrow and gravel over average 3½-mile distances to replace 4½ miles of the road, between Unionville and Collinsville, Connecticut.



When job report was taken, Tournapull was dumping into a 42 x 40-inch hopper. A flick of a switch activates hoist motor. Body lifts quickly, swings behind rear wheels to dump clean over bank, or into grizzly. Streamlined bowl sheds material readily. Body can also be held in any desired position for spreading on the run.

Tournapull—Trademark Reg. U.S. Pat. Off. R-966-Q-b

Angelo Tomasso, Inc.

hauls 1,200 tons of hard trap rock per day to a crusher in their quarry at New Britain, Connecticut. To an equipment fleet at this quarry that included a 2-yard shovel, a 15-ton Rear-Dump, and a 9-ton dump-truck, the company added a 22-ton C Tournapull Rear-Dump.

"We bought this machine in anticipation of working on a shelf. It is very narrow up there and we need to maneuver around...one false move and the machine would drop 90 feet," says A. Tomasso, Jr.

Maneuver safely on narrow roads

Tomasso and his crew soon found that Tournapull Rear-Dumps are well equipped to work safely on narrow shelves such as those encountered on this job.

Power steer makes the Tournapull easy and quick to maneuver. Prime-mover can turn 90° right or left for getting around in tight quarters.

In any emergency, Tournapulls' four-wheel multi-disc air brakes (with more braking surface on one wheel than most haulers have on all four) provide an extra bonus of safety. You can always depend on the Tournapull to stop instantly. Low center of gravity, good visibility, and front-wheel drive also contribute to Tournapulls' safety.

In the Tomasso quarry, rock crusher was located about 700 feet down 5% grade from the loading shovel. Rear-Dumps, hauling 18 tons of shot trap rock, traveled over the crushed rock haul-road in third gear, at speeds up to 11½ mph.

Comments Operator Albert Buchiere, "Trucks can't even get close to these machines. I've run about every type of haul unit there is and these 'Pulls are the best."

Cut lubrication time

Not only did the Tournapulls save time and money on hauling, but, according to Mr. Tomasso, it takes only ⅓ as long to lubricate the C Rear-Dump as it does to lubricate an ordinary dump-truck.

If you have hauling to do, over narrow roads or in close quarters, you will want more information on Tournapull Rear-Dumps' high production. Available in 11, 22, and 35-ton capacities, a size to fit your requirements. Write for full details.

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ARBA

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Review of Recent U.S. Patents On Non-Metallic Minerals

By Oliver S. North*

2,751,713 — Tetraalkylammonium salt insecticides are dispersed in **bentonite, attapulgite,** or **talc** to keep them free-flowing. Bentonite is preferred because it forms with those salts an additional salt that combines readily with soil. (W. W. Abramitis. Assigned to Armour & Co.)

2,751,775 — A method and some compositions for use in surface-finishing **concrete** masonry units, such as cinder block, haydite block, etc. The coating compositions utilize a polyester resin, a cation-exchange mineral, for example **bentonite,** and any of a wide range of inert mineral fillers, including **sand, diatomite, whiting, talc, silica** flour, **clay,** and other natural or manufactured granular particles. (J. A. Sergovic. Assigned to The Burns & Russell Co., Baltimore, Md.

2,752,222 — Potassium bicarbonate can be produced by reacting carbonic acid gas with raw potassium chloride, such as that obtained from **sylvinite.** (A. Birman. Assigned to Societe d'Etudes Chimiques pour l'Industrie et l'Agriculture.)

2,752,261 — Economical hydraulic cement compositions comprise about one-half granulated **blast-furnace slag,** about one-third a natural pozzolanic material, such as **pumicite,** and small percentages of **portland cement, limestone, gypsum,** and barium chloride. (P. A. J. Dournaud.)

2,752,275 — Protective and decorative surfaces for **concrete** block are made from a polyester resin, a catalyst, and a bulk filler, such as **sand, diatomite, clay,** etc. (B. L. Raskin and A. W. Morton. Assigned to The Burns & Russell Co., Baltimore, Md.)

2,752,282 — Suitable solid carriers for a ferric salt fungicide include **pyrophyllite, talc, chalk, lime, bentonite, gypsum, silica,** etc. (A. A. Somerville. Assigned to R. T. Vanderbilt & Co., Inc.)

2,752,315 — **Diatomite** is used as the preferred filler in a thermoplastic polymerized styrene molding composition. (N. S. Kuettel. Assigned to Curtiss-Wright Corp.)

2,752,322 — **Fuller's earth** is used as a catalyst in converting hydrogen-containing aromatic hydrocarbons to resins, while the softening point of the wax resin mixture can be increased by incorporating therewith **fuller's earth, kaolin,** or **talc.** (E. Knust. Assigned to Farbenfabriken Bayer Aktiengesellschaft.)

2,752,323—The hydrous type of mica known as **illite** is reported to be a desirable rubber filler. (H. M. Anfinset.)

2,752,521 — Natural or synthetic **hackmanite** is used as the image screen in a cathode ray device. Natural hackmanite is found at Magnet Cove, Ark., and in Canada. (H. F. Ivey.)

2,753,045—**Phosphate** rock is concentrated by a process of pneumatic flotation, wherein the creation of objectionable slimes is greatly minimized. (C. A. Hollingsworth. Assigned to Smith-Douglass Co., Inc.)

2,753,199 — A thin, sheet-metal gasket is protectively coated with a thermosetting resin, to which is applied finely ground, inert filler material, for example, **asbestos, mineral wool,** or **diatomite.** The inorganic filler then is bonded permanently in place by subjecting the gasket to heat. (J. H. Victor. Assigned to Victor Manufacturing & Gasket Co.)

2,753,242 — An apparatus and method for the electrolytic production of caustic soda from **salt** brines, such as those containing sodium chloride, sodium hydroxide, and other materials. (W. C. Davis. Assigned to The Sharples Corp.)

2,753,245 — The process for producing hydrogen fluoride from **fluorspar** is improved by first converting the raw material to fluosulfonic acid, which is then decomposed by the controlled addition of water. (W. F. Mitchell and J. A. Grant MacKay. Assigned to The Pennsylvania Salt Manufacturing Co.)

2,753,251 — Cited as suitable carriers for a halophenyl trialkyl urea herbicide are **talc, pyrophyllite, clay, diatomite, bentonite, fuller's earth,** etc. (H. J. Gerjovich. Assigned to E. I. du Pont de Nemours & Co.)

2,753,608—A non-reactive, smooth, permeable **gypsum** plaster mold is made by incorporating into the plaster slurry small amounts of a urea formaldehyde resin and a reaction-inhibiting material. (W. E. Nolan. Assigned to Aluminum Company of America.)

2,754,965 — In an improved process for the electrostatic beneficiation of **phosphate** rock, the ground ore is subjected to infrared waves to increase the electron susceptibility of certain components, and immediately passed through an electrostatic field. (J. E. Lawver. Assigned to International Minerals & Chemical Corp.)

2,755,169 — Acqueous sodium carbonate, or **soda ash,** can be manufactured by the described ion-exchange process. (F. C. Godfrey and G. Miller.)

*Copies of United States patents are available from Commissioner of Patents, Washington 25, D. C., at a cost of 25¢ each.

KAISER GYPSUM

(Continued from page 59)

rail siding alongside the warehouse floor. Before the dried boards go to the bundling machine they pass over a "booker," the purpose of which is to place two boards, finish faces together, preparatory to passing the trimmer and bundling machine. The transfer equipment at the dryer and the takeoff assembly are Coe units. The bundler is company-made. A "breaker" for cutting long lengths of gypsum lath into shorter sections was also supplied by Coe. Steam for the dryer is generated by two steam generators located in a separate boiler house.

A complete plant laboratory occupies a separate building on the plant property. Close checks are kept of the material and products at each stage of manufacture, and research and development work goes on constantly to improve and maintain the quality of the product.

In the laboratory a Honeywell potentiometer automatically records the setting time of gypsum test specimens. The unit can handle 32 samples at one time. When gypsum plaster sets, it releases heat. A test sample is put in a paper cup, and the electrodes are inserted. When the temperature rise is at its maximum the sample has set. A temperature curve is drawn on the recorder, and it is integrated with time readings so that a record of all setting time tests are available.

The company has a fleet of 15 Yale and Clark fork lift trucks in the warehouse. A McDonald lift unit is available for handling rolls of paper. This machine has curved grappling arms that can pick up a roll of paper and transport it to and from the warehouse.

At the opening of the Long Beach plant the firm held an open house and banquet. Principal speaker at the banquet was Wallace A. Marsh, vice-president and general manager of Permanente Cement Company. In his address Mr. Marsh pointed out that Kaiser supplies one-fourth of all gypsum products in the seven western states. "About 20 percent of all U. S.

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▲ Tournatractor moves in between shovel-swings to clean up spillage and doze blasted stone for easier loading. Shovel cycle is not interrupted, because of rubber-tired tractor's sure-footed speed on uneven pit floor.

Tournatractor handles dozing quickly . . . gets good bladeful of rock, moves about 2½ cubic yards in 30-ft. dozing run. Versatile machine handles many other quarry assignments, pushes in blasted stone, cleans up around stockpiles, pulls other equipment around quarry.

▼



Versatile Tournatractor dozes overburden between cleanup and other assignments. Shovel in background removes 6' to 10' of overburden. Tournatractor quickly cleans stone shelf so that production shovels can move in.

▼



Rubber-tired rig works fast on watery pit floor

A large Ohio quarry, producing 700,000 tons of limestone yearly, uses one rubber-tired Tournatractor to handle all clean-up and pit maintenance. The tractor covers 325 acres . . . maintaining and building haul roads, moving freight cars, pushing in toe of stockpiles, bunching blasted stone, cleaning around shovel.

6" of water, no barrier

A few days before these pictures were taken, heavy rains left as much as 6 inches of water on the quarry floor. Rolling easily on its big 21:00 x 25 low-pressure tires, the tractor maneuvered in and out of the watery loading area, handled its assignments quickly.

A major Tournatractor advantage when working in rain and water is that all moving parts in its power train are completely enclosed. They operate in a constant bath of oil, sealed against moisture. Lubricants stay in to prevent corrosion and maintain machine's high-operating efficiency and low-maintenance cost.

"Beats crawler on rock"

Foreman Bernard Boli said, "Tournatractor has crawler beat all to pieces on rock . . . gets around 1¼-mile quarry easily. Our biggest reason for buying the Tournatractor was speed." And operator Charles A. Slover said, "Tournatractor is a wonderful machine for the operator. It doesn't beat you around like a crawler. Besides lubricating quickly, and being able to move six 45-ton-load cars, I like the ease of riding."

Perhaps you can use a 208 hp rubber-tired "Quarryman"

To handle widely scattered dozing, pushing, and clean-up assignments, let Tournatractor help you speed operations, save you money. Let us show you owner-verified performance records of Tournatractor on work similar to yours.

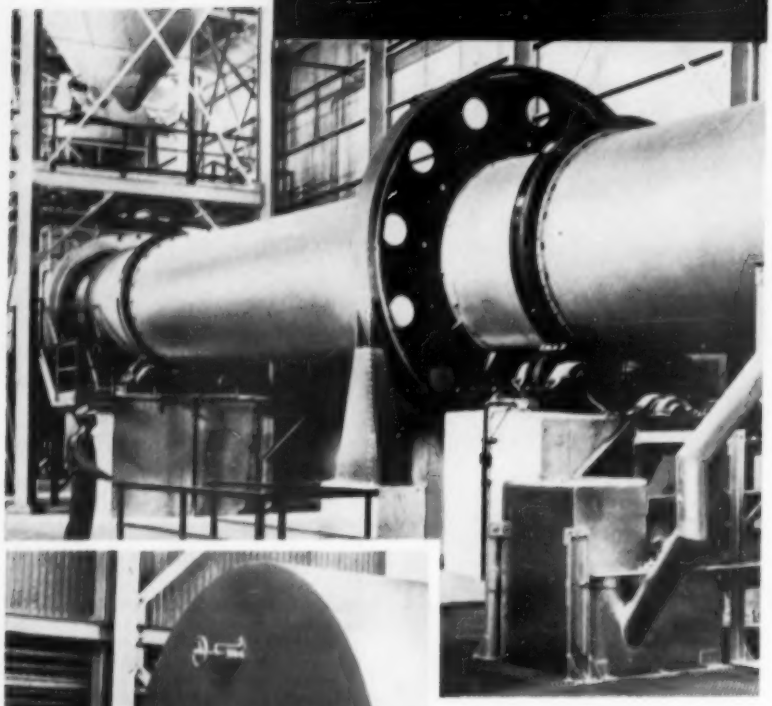
Tournatractor—Trademark Reg. U.S. Pat. Off. T-997-Q-b

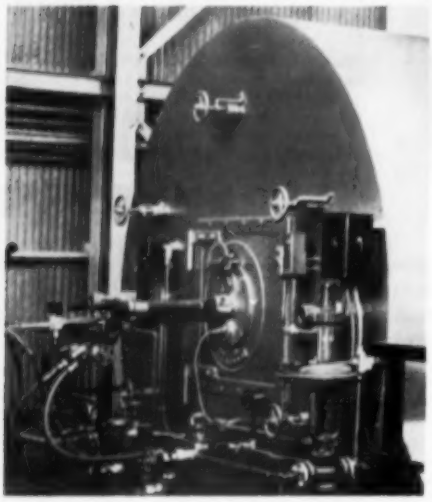
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Peabody Direct Fired Air Heaters have wide acceptance with rotary kiln designers and for a variety of products. A typical application at Virginia-Carolina Chemical Corp., Nichols, Florida, uses a Peabody Air Heater in conjunction with an Allis-Chalmers rotary kiln drier. The heater fires oil fuel at a maximum heat release of 110 million BTU/hr. to dry phosphate rock for fertilizer.

This installation, like every Peabody Air Heater, is job-engineered and custom-built to individual specifications. Years of experience and a wide variety of applications throughout the world, enable Peabody to offer assured performance for heat releases from 1 million to 300 million BTU/hr. and for furnace pressures from atmospheric to 10 or more atmospheres. Write for Bulletin 600-A.

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homes will be constructed in the far western states to meet the country's expanding population," Mr. Marsh said. "This means nearly $3 billion annually, which will develop annual demand for 1.2 billion feet of gypsum board products."

Attending the opening ceremonies were the following key officers of the affiliated Kaiser companies: E. E. Trefethen, Jr., executive vice president of Kaiser Industries Corp.; Carl R. Olson, vice-president, Henry J. Kaiser Co., from Kaiser headquarters at Oakland, Calif.; Fritz B. Burns, director and president of Kaiser Community Homes; G. J. Shea, president, J. F. Shea Investment Co. and a member of the board of directors of both Permanente Cement and Kaiser Gypsum; P. S. Hass, vice-president and assistant general manager, Permanente Cement Co.; James K. Beatty, vice-president in charge of sales, Permanente Cement Co.

Kaiser Gypsum Co. is the outgrowth of Standard Gypsum Co. of California, formed in 1944 by the Henry J. Kaiser Co. and Standard Gypsum Co., Inc., which had a plaster mill at Long Beach, Calif., and operated a gypsum quarry at San Marcos Island in the Gulf of California through a subsidiary, Compania Occidental Mexicana, S.A. In 1948, the Henry J. Kaiser Company purchased all the assets of the gypsum firm.

The two men sharing the principal responsibility for the everyday management of Permanente Cement Company and Kaiser Gypsum Company, Inc., its wholly owned subsidiary, are Wallace A. Marsh and Claude E. Harper, respectively. Mr. Marsh, vice-president and general manager of Permanente Cement, joined the Kaiser organization in 1937 as a sand and gravel salesman. Harper, vice-president and general manager of Kaiser Gypsum, began as a salesman of oil-well cement in 1941.

The Long Beach plant is under the direction of John O. Lewis, plant superintendent. Lewis joined Kaiser Gypsum in 1947 as a shift foreman and has been plant superintendent at Long Beach since December, 1949. Lewis is under the direction of John V. Pooler, operations manager for Kaiser Gypsum at the company's Oakland headquarters.

Serving under Lewis are the following department heads: Robert L. Allgood, board plant superintendent; Joseph McLellan, plaster mill; James Modaff, maintenance dept., assisted by Ruben H. Lanz, junior plant engineer; Jack D. LaFever, chief chemist; Donald Raley and R. Godlewski, warehousing and loading; and Larry Livingston, plant purchasing agent.

PERFORMANCE REPORT ON AMERICA'S BEST SELLING TRUCKS:



"WE ORDERED 10 CHEVY TANDEMS . . . ONE OF THE MOST PROFITABLE MOVES WE'VE EVER MADE!"



. . . says Mr. F. Roland Sargent, Sargent Construction Company, Saginaw, Michigan—a typical user of Chevrolet heavy-duty trucks.

"After sizing up these new models . . . we ordered 10 of them. *And let me say it has been one of the most profitable moves we've ever made.* During the wet spring this year, we had conditions on a job near Bay City which were worse than our firm has ever operated in . . . I honestly didn't think any truck could plow through that sea of wet, oozy muck. But we decided to make a try. When those Chevy tandems went in, the mud sucked them down on their axles . . . sometimes two-thirds of the wheels were actually buried . . . those trucks were literally crawling on their bellies. But they kept rolling. And, to my amazement, we didn't even have to lighten the nine-ton loads!

"Let me sum up by putting it this way. We've put in a new order to enlarge our Chevrolet tandem fleet."

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***Modern features* make new Chevrolet trucks the Performance Champs of the Heavyweight Class!**

New short-stroke 195-hp Loadmaster V8 powers Chevrolet top-tonnage trucks!

New Powermatic* — the first automatic transmission designed specially for big trucks!

New Triple-Torque Tandems hike G.V.W.'s to 32,000 lbs., G.C.W.'s to 50,000 lbs.!

Spicer 5-speed transmission† for extra pulling power, improved economy.

*Optional, extra cost, Series 5000 through 10000 models.
†Optional, extra cost, Series 9000 and 10000 models.

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They have power-transfer differentials—an exclusive "PAYLOADER" tractor-shovel feature that maintains effective traction on mud, gravel, ice and snow.

They have "no-stop" power-shift transmissions and torque converters . . . planetary final drives . . . power-steering and 4-wheel power brakes.

They have the exclusive bucket motion with 40° bucket tip-back at ground level and powerful pry-out action.

For proof of their superior performance and greater productive capacity, ask your "PAYLOADER" distributor for a demonstration.

1	**Dig More**	Powerful pry-out action and 40° bucket tip-back at ground level get full bucket loads with less spillage loss. Power-transfer differentials provide sure-footed traction for digging power.
2	**Carry More**	Bucket carry position is close and low for maximum stability. Hydraulic system shock absorber cushions loaded bucket — smooths the ride — permits higher carrying speeds with less spillage.
3	**Deliver More**	Since you get MORE to begin with and keep MORE while traveling at higher speeds . . . with less spillage in both instances . . . the result — you deliver more yards per load and more loads per hour.

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The "PAYLOADER" line is the most complete, most proven tractor-shovel line — sizes from 1¼ cu. ft. to 2¼ cu. yd. . . . choices of front-wheel-, rear-wheel- and all-wheel-drive.

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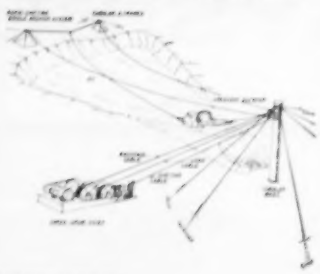
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Three Sauerman Methods for Cutting Excavating and Reclamation Costs





DIGGING and CONVEYING

Rapid Shifting DragScraper—Using a rapid shifting bridle system, a 4-cu. yd. DragScraper digs 200 cu. yds. per hour from an 80-acre gravel deposit. Rapid Shifter permits selection of desired sizes from various pit locations to obtain a proper mixture.



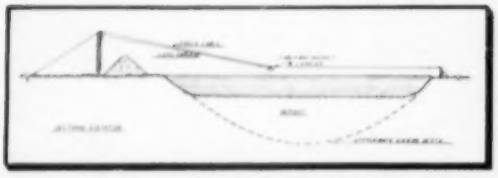
STORAGE and RECLAMATION

DragScraper—Clay reclamation from this 200-ft. storage shed is efficiently handled by a 1-cu. yd. DragScraper. From the controls of the Sauerman Hoist, the operator can reclaim to hopper from any part of the shed area. Winch at left provides power for lateral shifting of tail block and trolley on monorail.—*Sauerman News No. 140.*

UNDERWATER RECOVERY

Slackline Cableway—This cableway excavator is digging 50 ft. below water and delivering to a 60-ft. surge pile. Average haul is 600 ft. The slackline permits building a large stockpile due the height of discharge. (Drawing shows details of typical slackline installation.)

—*Sauerman News No. 141.*





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LABOR RELATIONS

(Continued from page 23)

in order to derive some benefit, it would be necessary to picket the Carswell project, too. After another conversation with Mr. Bateson, following generally the line of the conversation had with him on July 2, Blankenship and Bailey returned to Spears on July 7 and repeated the proposition that a supplier favorable to the union be substituted for Forth Worth Sand and Gravel Co. At this time Spears informed Blankenship that Hall Construction Co. had a subcontract to pour the floor of the hangar, but he thought Hall used union drivers. James Hess, superintendent for Hall, was present at this meeting and through him Blankenship learned that Hall's supplier for the Carswell project was 'non union'. As a result, Bailey warned Hess that, unless union drivers were given the job of hauling supplies for Hall, the whole Carswell project would be picketed. A picketing of Bateson's job at Carswell was begun on July 9, with signs reading, 'T. C. Bateson Construction Company Unfair To Local 47.'

State Court Order

"Spears testified that, on the day the picket appeared, he asked Blankenship 'what it would take to get the picket line off', and offered to replace Bateson's one part-time truck driver with a union man. The union representative, however, indicated that he was not interested in this driver, but wanted the whole job to be handled by union men. A state court granted a temporary restraining order and the picket was removed until July 13 when the restraining order was dissolved. The state court determined that it had no jurisdiction in the matter. At an unsuccessful meeting with S. N. Thompson, Bateson's chief engineer, on July 13, the union representative characterized Hall Construction Co. as a 'rat contractor'. A final effort to settle was made through the Fort Worth Building Trades Council, but this organization voted to allow the picketing to continue pending further negotiations. Thereafter, on July 23, Bateson signed a modified contract submitted by the union containing the 'subcontractor clause'.

Second Contractor

"On August 4 Blankenship, armed with a contract similar to the one first presented to Bateson, approached L. W. Boyd, a building superintendent for McCann Construction Co. at its Paschal High School construction job. McCann was general contractor for this project. Boyd testified that he

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told Blankenship there should be no difficulty in gaining recognition for the union on the job since McCann employed only one part-time truck driver. When Blankenship advised him that the situation was 'more involved' since McCann was using subcontractors, including Fort Worth Sand and Gravel Co., whose drivers were not organized, Boyd referred him to the company president, T. A. McCann. Mr. McCann testified that he was a 'union contractor' using union help whenever possible. At a meeting on August 6 attended by McCann, Leon Stanley, general manager of McCann Construction Co., and Blankenship, McCann agreed that the union could organize anybody working on his project, but stated that he did not employ any teamsters. To this, Blankenship replied that the contracts with the general contractors were being sought in an effort to reach the subcontractors who used non-union teamsters. Blankenship especially mentioned Joe Starks to whom had been sublet the excavating job at the Paschal School but who was not paying his drivers the union scale.

"McCann refused to sign the contract containing the 'subcontractor clause' explaining that to do so would alter the contracts previously entered into with the various subcontractors. Stanley testified that he also explained at length the company's position with regard to the contract containing the subcontractor clause, and then asked Blankenship, 'Just who are you mad at?' To this Blankenship replied: 'We are mad at Forth Worth Sand and Gravel, Joe Starks and anybody else who employs teamsters but refuses to execute a contract with our Local.' Finally Blankenship warned that, if the contract was not signed, a strike of members of the Fort Worth Building Trade Union Council on the Paschal school project would be called and the job picketed. When McCann Construction Co., through Stanley, again refused to sign the contract, a strike was called and the job was picketed from August 9 until August 24, during which time work on the Paschal school project came to a standstill. The picket signs on the job read: 'T. A. McCann Construction Co. Unfair To Teamsters Local 47.'

"The general counsel's witnesses, Bateson and McCann, testified positively that the various subcontractors were independent and their employees were not employees of the general contractors and were not hired or fired by them. Based upon this and other credible evidence the board found that the general contractors involved herein reserved no right of con-

(Continued on page 116)

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5 "Euc" REAR-DUMPS

10 to 50 Ton Capacities

for CONSTRUCTION, MINE, QUARRY and INDUSTRIAL WORK

10-Ton

Model UD has 128 h.p. engine . . . 10-speed transmission . . . 36 m.p.h. loaded travel speed . . . spring mounted drive axle with 12.00 x 24 duals.



Euclid Rear-Dump hauling units for off-highway service are available in five sizes with capacities of 10, 15, 22, 34 and 50 tons. They have diesel engines of 128 to 600 total horsepower.

The simple rugged construction of "Eucs" pays off in long life and low maintenance cost. You get more work-ability because there's less down time for repairs. There are more Rear-Dump "Eucs" in service than all other makes of off-highway haulers combined.

Have your Euclid Dealer give you facts and figures on the complete line of Rear-Dumps and other Euclid equipment . . . you may find, as hundreds of owners have found, that ***Euclids are your best investment.***

EUCLID DIVISION, GENERAL MOTORS, Cleveland 17, Ohio

15-Ton

There are two 15-Ton models with 5-speed transmission and 14.00 x 24 tires. Model FD has 165 h.p. engine, and 10 cu. yd. body. Model R-15 has 218 h.p. engine, spring mounted drive axle, power steering and 10½ cu. yd. body. Quarry body is available for either model.



22-Ton



Model TD "Euc" is equipped with 300 h.p. engine, spring mounted drive axle with 18.00 x 25 duals, power steering and 15 yd. body. Available with Torqmatic Drive or 10-speed transmission. Standard or quarry body is available.

34-Ton

Model FFD has two engines providing a total of 400 or 436 h.p. to tandem drive axles through separate Torqmatic Drives. Dual tires are 16.00 x 25. Exhaust heated body has 24-yd. capacity.

50-Ton

Similar in design to the Model FFD "Euc", the 50-ton Twin-Power Model LLD has a total of 600 h.p. and an exhaust heated body with 32-yd. capacity. Tires are 18.00 x 33.

Euclid Equipment

FOR MOVING EARTH, ROCK, COAL AND ORE

EUCLID

GM POWER

Keep hard to handle materials on the move through bins, hoppers, chutes



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SYNTRON
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Syntron Electric Vibrators are specifically designed as an efficient, economical means of keeping stubborn materials on the move. Eliminate work stoppages due to arching and plugging of material supply lines. Quality built and powerful, they set up a flow of 3600 controlled vibrations per minute that keep the most stubborn materials free flowing. Provide long continuous service with little or no maintenance. Available in a wide range of sizes to meet every requirement.

OTHER SYNTRON EQUIPMENT OF PROVEN DEPENDABLE QUALITY

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trol nor did they control the methods of operations of the subcontractors.

Board's Order

"Upon a review of this and other similar evidence heard by the trial examiner, both he and the board found that the union had no 'primary dispute' with Bateson and McCann as general contractors, and that they were picketed as 'secondary employers'; that the unions immediate object was to raise the wage scale of drivers employed by subcontractors; but that, in demanding a contract with the general contractors containing the 'subcontractors clause', the union, in effect, sought to prevent these general contractors from doing business with such subcontractors who might refuse to honor the terms of that contract. The board expressed its decision thus: 'To that extent, at least, it is clear that it was an object of the union in picketing Bateson and McCann to force them to cease doing business with Texas and Hall. Accordingly, we find that the union's object falls within the proscription of Section 8(b) (4) (A).'

"The board ordered, among other things, that the union and its officers and agents cease such activities and that a notice be posted in the union's business office signed by designated agents, stating that the union would not encourage employees of McCann or Bateson to strike for the purpose of requiring these employers to cease doing business with Texas Industries or Hall Construction Co.

"We think that the findings of the trial examiner, insofar as adopted by the board in its order, are amply supported by substantial evidence in the record to show that the object of the union's picketing of Bateson and McCann was within the scope of those activities prohibited by Section 8(b) (4) (A) of the National Labor Relations Act.

Denver Building Trades Case

"The intent and purpose of Section 8(b) (4) (A) is set forth in N.L.R.B. v. Denver Building & Construction Trades Council, 1951, 341 U.S. 675, 686, in the Supreme Court's quotation from the conference report to the House of Representatives with regard to this section:

"'Under clause (A) (of Section 8(b) (4)) strikes or boycotts, or attempts to induce or encourage such actions were made unfair labor practices if the purpose was to force an employer or other person to cease using, selling, handling, transporting, or otherwise dealing in the products of another, or to cease doing business with any other merchant. Thus it was made an unfair labor practice for a

Niagara Stone Corp.

like air controls, ease of operation in their NEW

2½-yd. LORAIN-85



Proof that Niagara Stone Corp. of Niagara Falls, New York, like Lorains is the fact that they have just purchased a new 2½-yd. Lorain-85 Shovel. A previous 1¾-yd. Lorain-80 Shovel served them long and well —digging many hundreds of thousands of yards of tough dolomite limestone. When Niagara Stone Corp. again was in the market for a new shovel, Lorain was their choice for the second time.

Niagara's new 2½-yd. Lorain-85 is shown in the photo. It is quarrying shot rock against a 20-ft. face at their limestone quarry. The Lorain loads 15-ton trucks in 3 minutes each for hauling to the rock crusher and works a steady 9 hours a day. An average of 250 tons per hour is loaded out by the Lorain.

Niagara Stone Corp. report they are well pleased with the new Lorain-85, particularly the new "Metered-Air" controls. They report these controls add greatly to ease of operation in the 2½-yd. shovel.

There are many other modern features in Lorain-85's that contribute to operating efficiency and big production. The 3-shaft turntable design permits simultaneous hoist, swing and travel. The double center drive power transmission applies maximum engine power to all operations. A torque converter power take-off is available for the most productive digging results. The new "Metered-Air" power is applied to easily operate hoist, crowd, retract, travel, boom derricking and lowering clutches. In addition, the big "85" is equipped with a new, huskier 26-ft. shovel boom for greater digging ranges. You will find the Lorain-85 Shovel a real, heavy-duty money-maker for the most demanding digging duty.

See your Thew-Lorain Distributor for facts about the 2½-yd. Lorain-85 . . . get the story about the new "Metered-Air" controls and the many other features that you will want in your next shovel!

THE THEW SHOVEL CO., LORAIN, OHIO

THEW LORAIN

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union to engage in a strike against employer A for the purpose of forcing that employer to cease doing business with employer B. Similarly it would be unlawful for a union to boycott employer A because employer A uses or otherwise deals in goods of, or does business with employer B.'

"And, in the same case, the Supreme Court stated (p. 689): 'It is not necessary to find that the *sole* object of the strike was that of forcing the contractor to terminate the subcontractor's contract.'

"The board had sufficient evidence before it to justify a finding that the union's activities in this case were directed not at Bateson and McCann, but at certain of the subcontractors. Clearly the purpose was to force subcontractors to abide by terms of contracts with the general contractors. If the subcontractors refuse to abide by these terms, the general contractor was forced either to provide directly the increased wages for the subcontractors' drivers or to cease doing business with the subcontractors. These objectives and the direct effects of the union's efforts in this respect render the union's picketing of the general contractors violative of the 'secondary boycott' provisions of the Act.

"The order will, therefore, be enforced."

An interesting follow-up of this case was given by L. N. D. Wells, Jr., of the firm of Mullinax and Wells, Dallas, Texas, who pointed out that neither the court nor the N.L.R.B. ruled on the question of whether the Taft-Hartley secondary boycott section bars such picketing of general contractors for clauses designed to regulate subsequent dealings with subcontractors who aren't yet identified. The only issue presented to the board and the court was the legality of picketing for such a clause as it applied to "an identified and presently employed subcontractor."

SOUTHWESTERN EXPANDS

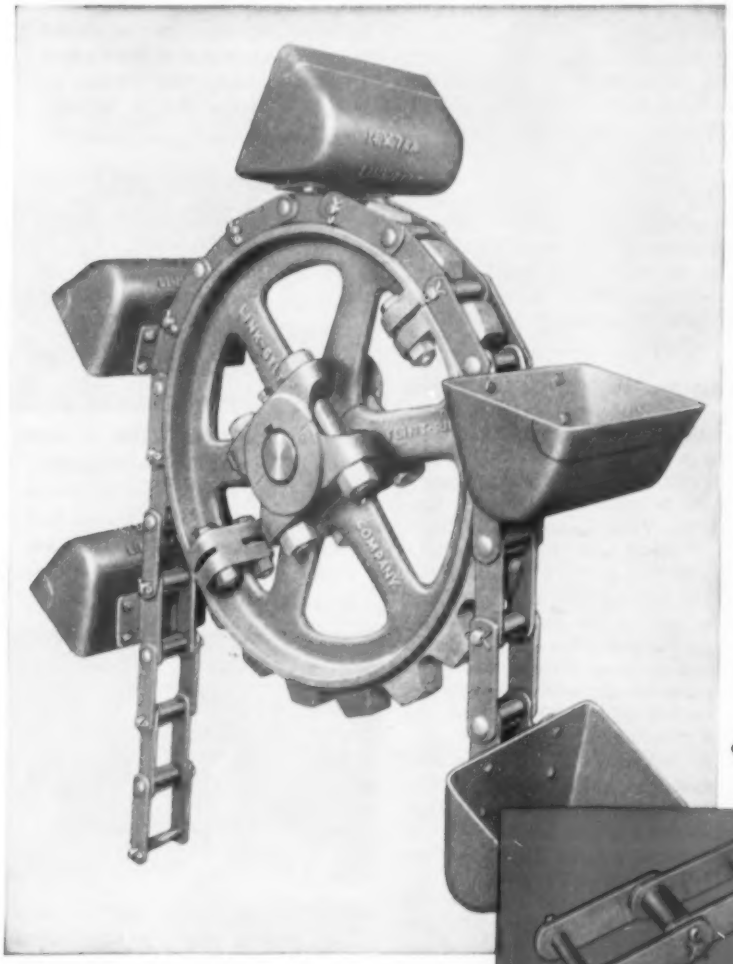
(Continued from page 82)

tion units. Track scales on one side of the silos weigh a car as it is loaded by Airslides; a similar setup on the opposite side is used for trucks. Loading capacity is 2000 bbl. per hr. In each scale room, push button controls with green-red-yellow lights are available for use in the protected loading process. Each new silo is 36-ft. in diameter.

One double-purpose truck recently was placed in operation to haul cement into Los Angeles and return to Victorville loaded with fuel oil. The cement is carried in a separate housing that surrounds the oil container. Maximum pay loads are hauled both ways.

4 times the life... 1/4 the maintenance

through proper selection of LINK-BELT *chain*



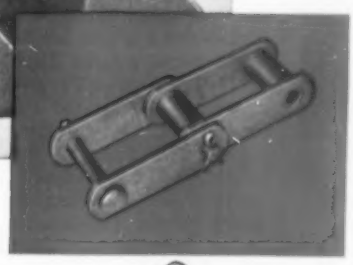
Bucket elevator at fertilizer plant proves advantage of choosing from this complete line

Often there's no need to go to excessively costly cast special alloy chains to get long life. Here's proof: In an Indianapolis fertilizer plant, Link-Belt SS-111 bushed chain (left) handled an average of 75,000 to 80,000 tons of fertilizer before requiring replacement. The previous type of chain had to be replaced after handling 18,000 tons.

This installation is an example of the efficiency and economy that can be gained by applying the one chain best suited to specific conditions from the complete Link-Belt line. Remember, no other single source offers you such a broad range of roller, silent, cast, combination, forged and fabricated chains . . . with matching sprockets.

A call to your nearby Link-Belt office or authorized stock-carrying distributor will bring you all the facts about the complete line of Link-Belt chains and sprockets.

Under severely corrosive conditions, Link-Belt SS chain on bucket elevator of this type in fertilizer plant handled 80,000 tons, to previous chain's 18,000.



Looking for the *best* chain for a specific need? Link-Belt makes the *complete* line.



LXS steel chain



800 Lay bushed chain

Class C combination chain





"Flint-Rim" cast sprockets

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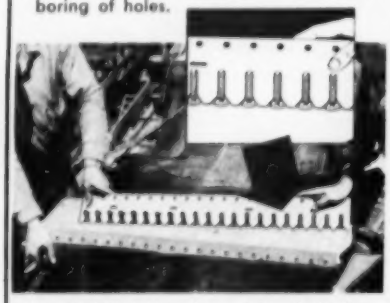
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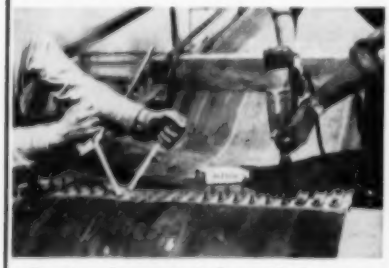
Your two man belt team can now join a belt 30" wide in 15 to 20 minutes . . . using the new FLEXCO Power Tools.



The FLEXCO Power Tool Boring Bit used with electric or air impact tool speeds boring of holes.



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Running down nuts is fast with the new FLEXCO Power Wrench used with electric or air impact tool. Two Bolt Breakers are used together to complete the joint.

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N.C.S.A. DIRECTORS' MEETING

(Continued from page 104)

to determine their true value for use in bituminous concrete. He also discussed the need for additional study through research on the use of stone for dense-graded base course construction.

J. R. Boyd, administrative director who was elected executive director effective August 1, gave a complete and informative review of the legislative developments that affected the association's work the past year, and the Washington office activities in connection therewith. Mr Boyd also outlined the work expended on proceedings for Ex Parte 196 of the Interstate Commerce Commission, in opposition to the seven percent increase in freight rates. The Commission, however, allowed a six percent increase.

Big news was a report on the shift of the January 1957 convention site to the Bal Harbour area of Miami Beach, Fla. The move is believed to be an advantageous one for the Association, because the seven-hotel group on the north shores of Miami Beach will be better able to handle the convention reservations.

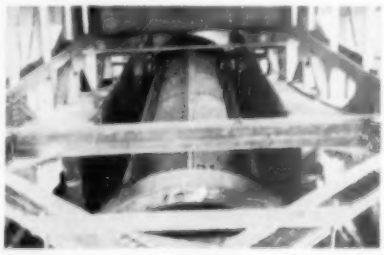
Dates for the 1957 Miami Beach 40th annual meeting are January 15, 16 and 17. Convention headquarters will be in the Americana Hotel of the Bal Harbour group. Other close-by hotels to be utilized include the Balmoral, Sea View, Colonade, Bal Harbour, Ivanhoe and Kenilworth. No change in arrangements was made for the 1957 mid-summer meeting, which will be held at the Homestead, Hot Springs, Va. about the middle of July. A date is to be set for a return to the Homestead for the 1959 summer meeting. No decision was made on location for the 1959 annual meeting.

Plans for the 1958 exposition were discussed at a meeting of the executive committee, Manufacturers' Division, N.C.S.A., held on the first day of the two-day Lake Placid meeting. The exposition and convention will be held at the Conrad Hilton Hotel, Chicago, Ill., in February 1958, during the week following the combined meeting of the National Sand and Gravel Association and the National Ready Mixed Concrete Association. Those manufacturers planning to exhibit at both shows will be given an opportunity to request booth space at the hotel, to reduce the problem of moving equipment as much as possible between shows. N. E. Kelb, president of N.C.S.A., spoke briefly to the manufacturers' meeting. Wayne W. King, Baltimore, Md., chairman of the Manufacturers' Division, presided.

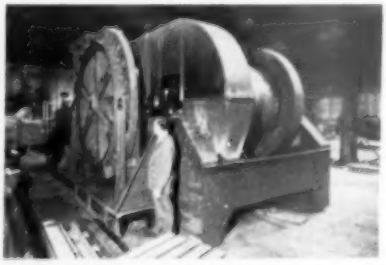
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BUCKET LADDER AND HYDRAULIC DREDGES for dredging placer properties, harbor and levee construction, channel changes, production of sand and gravel. Hydraulic dredges from 6-inches up; bucket sizes: 2½ to 18 cu. ft., or larger. Digging depths below water as required.



ABRASION RESISTING STEEL SCREENS—flat or revolving for separating, scrubbing, sizing. Holes taper drilled to prevent clogging. All thicknesses from 3/16" up; other dimensions as needed. Abrasion resisting steel plates available from stock.



DOUBLE-DRUM HOIST, 1,000-ton capacity, built to handle 194-foot digging ladder, typifies heavy equipment Yuba can build for you.

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- **CAPACITY:** Saws and strips (2) boards ⅜" or ½" thickness 48" wide to 14' or 16' and intermediate lengths. Strips (2) ½" x 24" x 8' pieces of sheathing. Extra set of chains supplied for this operation. Chains with lugs for running 32" wide boards supplied at extra cost if wanted.

- **POWER-SPEEDS:** Reeves Vari-Speed 3 HP 220/440 volt main drive, 15' to 90' fpm, calculated by foot board travel through machine; or, can supply sufficient speed to meet plant output. Limit switch controls start and stop in emergency or no boards on chain.

- **POWERED ADJUSTABLE HEAD:** (optional right or left hand). 1½ HP motor; in or out switch control; visible indicator tape; hand wheel for minute adjustment.

- **MECHANICAL CONVEYOR CHAIN SYNCHRONIZER:** Conveyor chain lugs synchronized by means of turning hand wheel while machine is in operation.

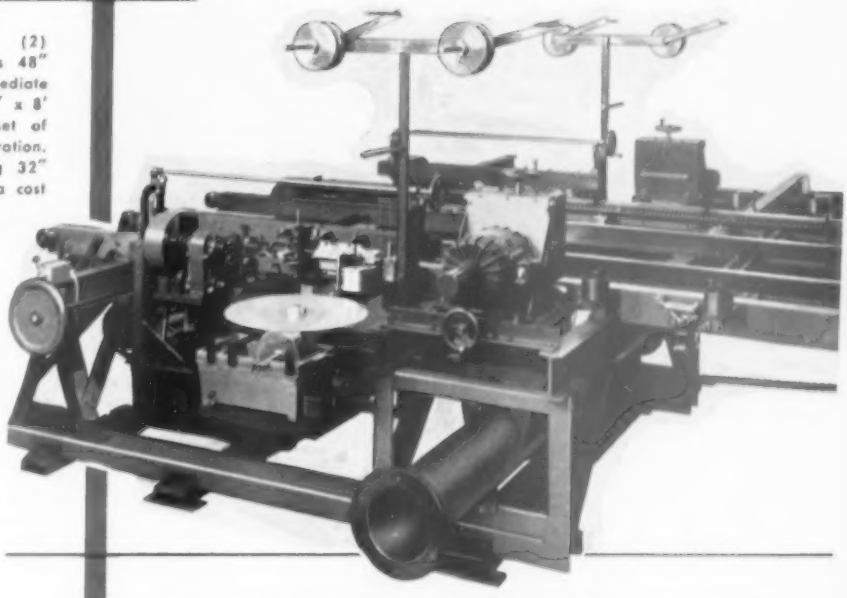
- **SAWING ASSEMBLY:** Powered with 5 HP special design, totally enclosed, ball bearing 3500 RPM 220/440 volt motor; 12" diameter, 40 tooth carboloy tipped saws; 4 node stellite tipped chip breakers; adjustable board holdowns; cover guard.

- **DUCT WORK:** 10 and 14 gauge galvanized welded and ground joint, telescoping for various lengths; clean out openings; complete.

- **GLUE POT — TEAR STRIP:** Double cooker type for glue; extra large new design; split roller design for gluing edges of tape and thin center line for tear strip; tear strip roll mount; guides; accessories.

- **DESIGN:** New extra heavy design for high speed operation; special knives and trips.

- **SHIPPING WEIGHT:** Domestic approx. 7000 lbs. Export approx. 9000.

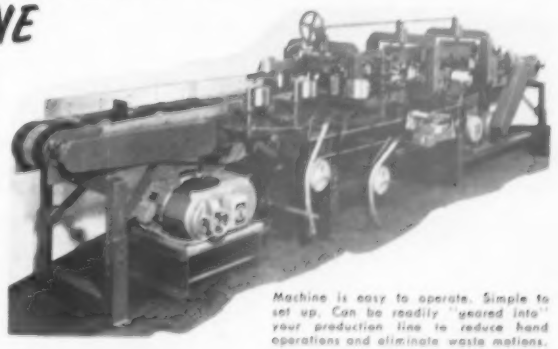


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LATH BUNDLING MACHINE

Handles a bundle of 6 lath. Binds the edges tightly, neatly, swiftly. Reduces this operation to a smooth flowing function rather than a complicated hand-done labor job. Cuts the cost. Models available for stripping either edges or ends.

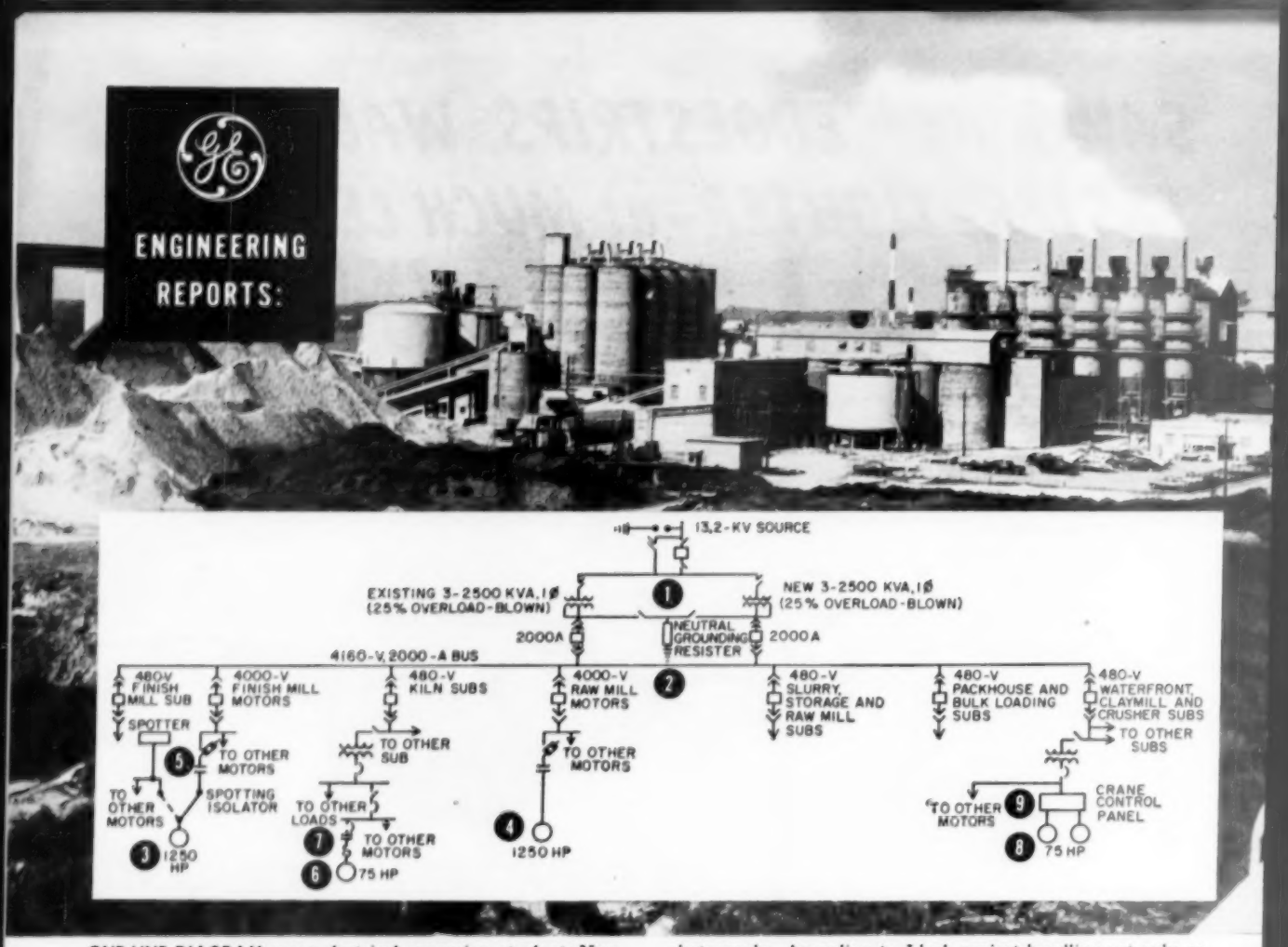


Machine is easy to operate. Simple to set up. Can be readily "geared into" your production line to reduce hand operations and eliminate waste motions.

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ENGINEERING REPORTS:



ONE-LINE DIAGRAM maps electrical expansion at plant. Numbers indicate typical new equipment supplied and are keyed to photographs. According to Ideal, project handling not only resulted in co-ordinated system but also cut administrative details.

General Electric engineers, equipment help

Baton Rouge plant expansion exemplifies General Electric's "system approach" to providing highly reliable, economical power components

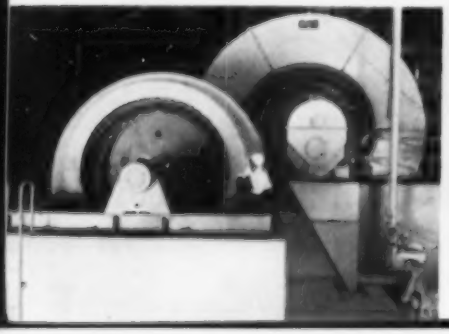
To better supply demands for cement in fast-growing southern and western states, Ideal Cement Co. announced plans in 1955 for companywide expansion aimed at raising capacity 50 percent. General Electric was selected to provide electrical systems for several of these new and expanding plants.

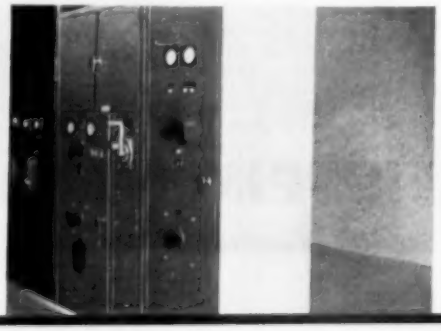
ONE SUCH PLANT, where General Electric was given project responsibility for supplying the electric equipment, was the Baton Rouge, Louisiana, wet-process plant. Here capacity was raised from 2,200,000 bbls. to 2,800,000 bbls. annually.

4 RAW-MILL DRIVE is another 1250-hp synchronous motor, emphasizing today's trend to larger milling units.

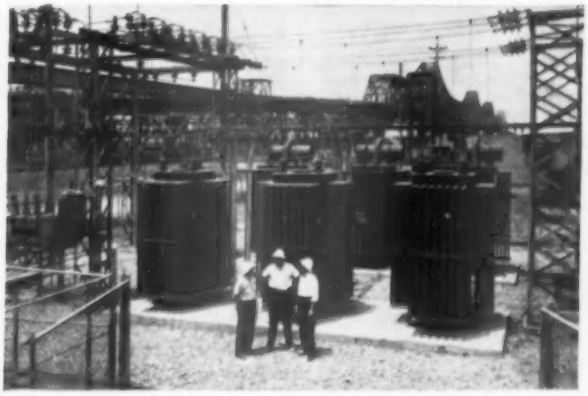
5 LIMITAMP* CONTROL (L) starts, protects 4000-v mill motors. Spotter allows slow rotation of mills for positioning of manholes.

6 KILN DRIVE uses simple, rugged adjustable-speed wound-rotor motor to provide reliability on this vital function.

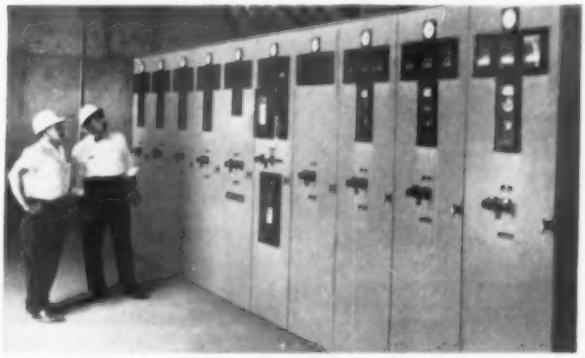




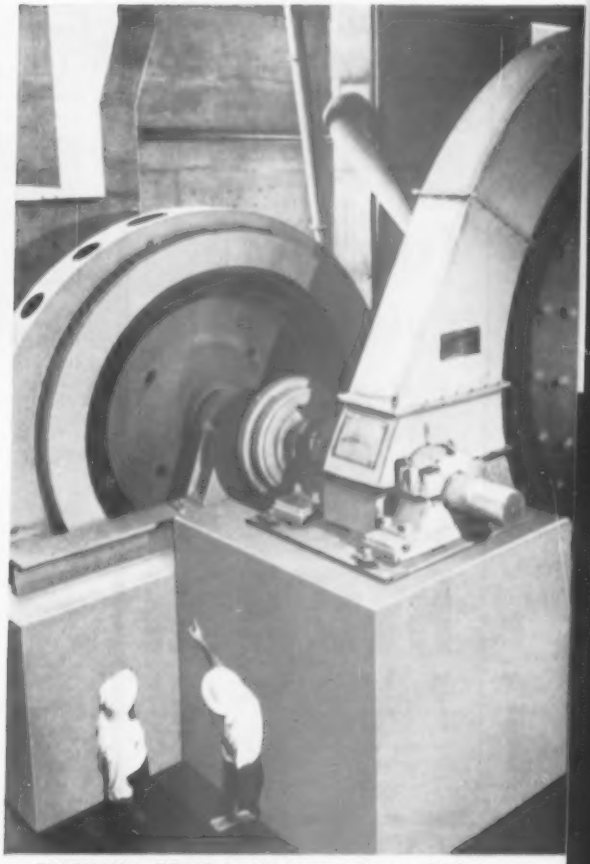




1 MAIN SUBSTATION features neutral grounding system on 4.16-kv supply and new medium transformers which match existing bank. "Repetitive manufacture" units are shipped completely assembled, resulting in easier, less costly installation.



2 METAL-CLAD SWITCHGEAR protects main circuits, is located indoors for protection from atmosphere. In event of utility line's high-speed reclosing after faults, trip-out action of synchronous motor feeder minimizes possible damage to mills.



3 FINISH-MILL DRIVE is 1250-hp, 180-rpm, high-torque, synchronous motor specially designed for extra-heavy starting and cascading duty of ball-mill service. Unit allows spotting of mill manholes.

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G-E engineers, skilled in cement applications, and able to take a system approach to plant power needs, worked closely with customer engineers. They related power system characteristics to requirements of the ball mills in order to select motors and control exactly suiting specific needs. Tough auxiliary drive problems were handled in the same way.

As a result, the plant has a matched, well co-ordinated system wherein each component is integrated with the characteristics of the others. This helps assure Ideal top reliability and flexibility at most reasonable overall purchase, operating and service cost.

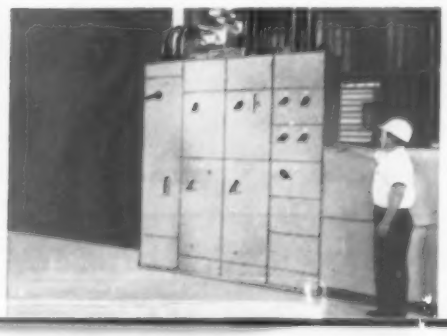
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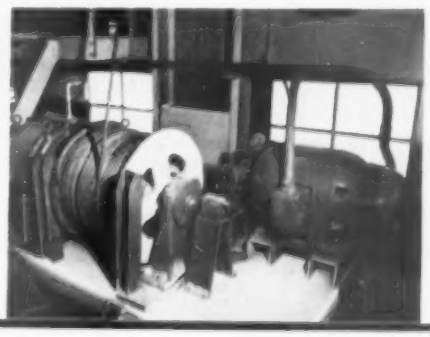
Engineered Electrical Systems for Rock Products Industry

GENERAL ELECTRIC

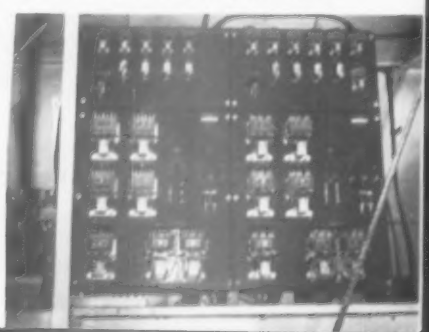
7 KILN-DRIVE CONTROL as well as other low-voltage motor control is provided by convenient, factory-wired control centers.



8 CRANE DRIVE of Tri-Clad* wound-rotor motors at waterfront crane has given Ideal highly reliable service for several years.



9 CRANE CONTROL, since conversion to co-ordinated G-E system, has aided in increased production.



STEEL

Every Kind

Quick Delivery

Plates, Structurals, Bars, Sheets, Tubes, etc. Carbon, Alloy, Stainless Steels, Babbitt Metal.

RYERSON

Joseph T. Ryerson & Son, Inc. Plants at New York • Boston • Wallingford, Conn. Philadelphia • Charlotte, N.C. • Cincinnati Cleveland • Detroit • Pittsburgh • Buffalo Chicago • Milwaukee • St. Louis • Los Angeles • San Francisco • Spokane Seattle.

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MANUFACTURERS NEWS

Admixtures, Inc., Pasadena, Calif., announces that Frederick W. Drury, Jr., has been named general manager of the company, developer and manufacturer of Colorfull admixture, a basic component of Colorfull ready-mixed concrete, and distributor of Maracon, a water reducing retarder for concrete. Mr. Drury was formerly vice-president and chief engineer of the Airox Co., where he assisted with the development and promotion of the use of pozzolanic materials for control of alkali-aggregate reaction in concrete. He is author of "Pozzolans in California" for the Mineral Information Review of the Division of Mineral Resources, State of California.



F. W. Drury, Jr.

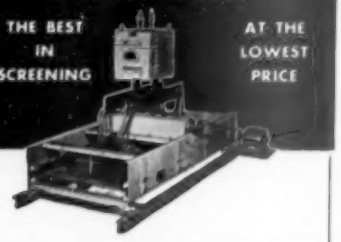
The T. L. Smith Co., Milwaukee, Wis., has opened a new plant in Lufkin, Texas, for the manufacture of truck mixers, agitators, stationary tilting type mixers and portable concrete mixers. The new plant has approximately 45,000 sq. ft. of manufacturing space and 9000 sq. ft. of office space, and is designed to service the south and southwest portion of the country as well as the Latin American market.

Nordberg Mfg. Co., Milwaukee, Wis., announces the death on June 18 of J. M. Thistlewaite, retired sales representative for the crusher division, at his home in Sheridan, Ind. Associated with the crushing machinery industry for 50 years, Mr. Thistlewaite was sales representative in the middle western and south-

UNIVERSAL

THE BEST IN SCREENING

AT THE LOWEST PRICE



THE MOST MODERN AND EFFICIENT ELECTRIC HEATING EQUIPMENT AT A REASONABLE PRICE

- **VIBRATING SCREENS-** *All sizes and types*
- **UNILEC HEATING EQUIPMENT**
- **UNIFLEX VIBRATORS**
- **UNIVIBE RIDDLES**

WRITE FOR CATALOG NO. 150

UNIVERSAL VIBRATING SCREEN CO.
Racine, Wisconsin
Quality Screens Since 1919

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Before and After Rebuilding with N. M. MANGA-TONE

Notice the worn condition of this 2 foot gyratory liner. Then see how perfectly it has been rebuilt with N. M. Manga-tone by the Two-Tone process.

This job was done right at the plant by the plant's maintenance welder. When almost back to size, a final coating of Resisto-Loy was made over the Nickel-Manganese build-up.

The total cost in this case was still substantially below the purchase price of a new liner. You, too, can make these savings by calling in our field man to analyze your problems.

THE RESISTO-LOY CO., INC.

Manufacturers
GRAND RAPIDS 7, MICHIGAN

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eastern states for more than 20 years until his retirement in 1949.

Allis-Chalmers Mfg. Co., Milwaukee, Wis., announces that John K. Gibson has been named an application engineer for cement and pyro-processing sales in the processing machinery department. He recently completed the training course for graduate engineers.

Lamson Mobilift Corp., Portland, Ore., announces the election of John R. Titlow as a director and vice-president in addition to his duties as manager of sales and service. Prior to joining the company, Mr. Titlow was associated with the industrial truck division of Clark Equipment Co.

Borg-Warner Corp., Chicago, Ill., has acquired the assets of the Industrial Crane and Hoist Corp., Chicago, Ill., materials handling equipment manufacturer.

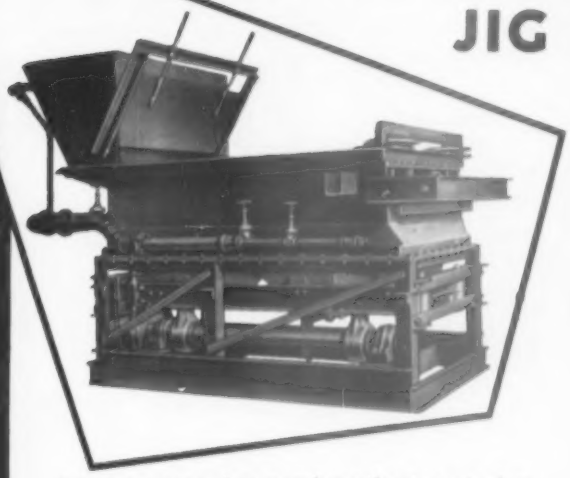
The Electric Storage Battery Co., Philadelphia, Penn., has announced the election of E. J. Dwyer as a vice-president in addition to his duties as secretary. Dr. L. E. Lighton has retired as vice-president and director of research after 35 years of service and will be succeeded by Capt. Clifton G. Grimes, U.S.N. (Ret.).

Thor Power Tool Co., Aurora, Ill., announces that Jack R. DeBacher has been elected a vice-president. He has been executive vice-president of the SpeedWay manufacturing division at Cicero since 1955.

General Refractories Co., Philadelphia, Penn., has announced plans for a new basic refractory brick manufacturing plant at Gary, Ind., to serve the Midwestern area.

H. K. Porter Co., Inc., New York, N.Y., announces the appointment of Joseph A. Bell as district sales representative for the Leschen wire rope, Quaker rubber and Henry Disston

THE MECKUM
SAND AND GRAVEL
JIG



REMOVES
WOOD
LIGNITE
OCHRE
SHALE
POROUS STONE
SOFT STONE
COAL
CHERT
CLAY

Improve your sand or gravel specifications at a low cost per ton. Of compact design, the Meckum Jig separates low from high specific gravity materials with a positive water and mechanical action.

Write us for details or nearest installation.

MECKUM ENGINEERING, INC.

53 W. Jackson Blvd., Chicago 4, Ill. Dayton Road, Ottawa, Ill.

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just what the "doctor" ordered . . . *for heavy loads of crushed stone!*

Any quarry "specialist" will tell you there's nothing like this Hendrick Wedge-Slot C-12 Screen with mounted skid bars for heavy duty screening.

The rugged skid bars protect the wedge-slot profiles from the large boulders. The C-12 profile bars have thick parallel head flanges to maintain uniformity of openings until the entire head is worn down. Designed for tops in heavy duty service and excellent drainage quality, C-12 bars are 12/64 of an inch wide . . . slots run the whole length of the screen. Write for details.



Perforated Metal • Perforated Metal Screens • Wedge-Slot and Hendrick Wedge Wire Screens • Architectural Grilles • Mitco Open Steel Flooring • Shur-Site Treads • Armorgrids • Hendrick Hydro-Dehazer

Hendrick
MANUFACTURING COMPANY
47 DUNDAFF STREET, CARBONDALE, PA.
Sales Offices in Principal Cities

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BITES DEEPER DUMPS FASTER



PROMPT SERVICE AVAILABLE

Factory service on Kiesler Buckets and as an accommodation on other makes, too. Whatever the problem, feel free to call on us.

Whether you need to rehandle or excavate, you will move MORE IN LESS TIME with a KIESLER CLAM SHELL. Our guarantee (see below) is the result of decades of experimentation and factual impartial testing; using *proven* principles of leverage and power and applying that power and leverage to *both* shells the KIESLER CLAM SHELL has more DIGGING-IN ability than any other bucket manufactured. And this digging ability is not dependent on dead weight (counterweights) nor large amounts of cable, hence longer cable life.

Note, too, how little KIESLER shells have to be opened to dump whole load: no "tailing-off" with a KIESLER. This is CONTROLLED DUMPING!

GUARANTEE

Kiesler Buckets are guaranteed to outperform and do a bigger day's work than any other Bucket of equal weight, width and size, when properly reeved and operated.

JOS. F. KIESLER CO.

KIESLER
Since 1892

944 W. HURON ST. • CHICAGO 22, ILL. • MONROE 6-7144

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divisions, which include North Dakota, northern Minnesota, Wisconsin and Michigan. He was formerly sales and district manager of Thor Power Tool Co.

Joseph T. Ryerson & Son, Inc., Chicago, Ill., announces that the division of industrial engineering has been changed to plant engineering division with Herbert G. Dent as director. The division of standards and methods has been renamed the operating controls division, with George M. Harding as director.

Air Reduction Co., Inc., New York, N.Y., has moved its executive offices to 150 E. 42nd St., New York, N.Y.

Mack Trucks, Inc., New York, N.Y., announces that the Brunswick Ordnance Corp.; Mack Mfg. Corp.; Mack Motor Truck Corp.; Mack Motor Truck Co.; Mack Brothers Motor Car Co.; and International Plainfield Motor Co., wholly-owned subsidiary companies, have been merged under the parent company.

The National Roll & Foundry Co., Avonmore, Penn., has elected as president Charles P. Whitehead, who is also president of General Steel Castings Corp., of which National Roll & Foundry is a subsidiary. William A. Curran and J. Harvey Johnston were re-elected vice-presidents. Ralph H. Scholl was appointed manager of roll sales and William Johnston, Jr., manager of castings sales.

Union Wire Rope Corp., Kansas City, Mo., has opened a new warehouse at 701 Main St., S. E., Minneapolis, Minn., to serve the west north-central states. L. E. Anderson is the district manager.

Blaw-Knox Co., Pittsburgh, Penn., announces that Paul J. Wolfert has been appointed supervisor of export sales. He succeeds H. T. Schwier, who has resigned to represent Blaw-Knox in foreign sales of rolls and rolling machinery, including steel plant equipment.

Western Machinery Co., San Francisco, Calif., announces the appointment of W. E. Galland as manager of the solids pump division. He succeeds G. Y. Murray who has been placed in charge of western sales for the Western-Knapp Engineering division.

Thermoid Co., Trenton, N. J., has announced the election of Charles M. Scholz as vice-president. He was formerly assistant to the president.

International Harvester Co., Chicago, Ill., announces the appointment of Michael F. Peckels as director of consumer relations. He was formerly manager of the consumer relations department and will be succeeded by William O. Maxwell, assistant manager of the department.

St. Regis Paper Co., New York, N.Y., has appointed Clyde C. Stinebiser as branch manager of the new multiwall bag plant at Kansas City, Mo. He was formerly superintendent at the Pensacola, Fla., multiwall bag plant.

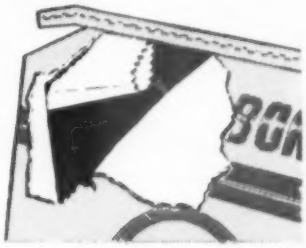
Stedman Foundry & Machine Co., Inc., Aurora, Ind., subsidiary of United Engineering & Foundry Co., Pittsburgh, Penn., announces that L. A. Rhodes has been appointed manager of the machinery division. For the past 15 years he has been manager of crusher and pulverizer sales, industrial division, The Jeffrey Mfg. Co.

Dravo Corp., Pittsburgh, Penn., announces that F. J. Lloyd, Jr., general manager of the Keystone division, has been elected a member of the board of directors. Mr. Lloyd has been with the company since 1923. He is also a member of the board of directors of the Ready-Mixed Concrete Association of Metropolitan Pittsburgh.

(Continued on page 130)

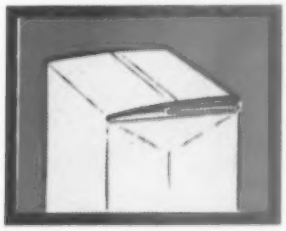
New Developments at A&S

THE TILTED VALVE BAG



This new closure was developed by one of our customers to prevent sifting of fine materials, and is now offered on standard A & S bags without upcharge. The Tilted Valve is a must for the fertilizer and rock products industries, which have long been seeking a multiwall bag combining an automatic closure with a positive, sift-proof seal.

THE ARKTITE BAG



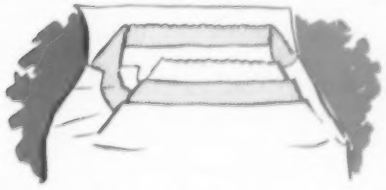
The new A & S Arktite Bag is not only sift-proof and tamper-proof, but also capable of standing upright on packing lines and shelves. It has thermoplastic seals throughout and liners of paper, film or foil.

THE ZIP-TOP MULTIWALL BAG

Already a favorite with multiwall users from coast to coast, the A & S Zip-Top is typical of the trend-setting features you find on our bags. This new easy-opening construction is available on any A & S multiwall at no extra cost.



THE STEP-FLEX BAG



A new multiwall bag soon to go into production. It is triple-sealed top *and* bottom with the unique Step-Flex closure, forming a sift-proof barrier against product loss or contamination. This new closure provides three multiwall layers, staggered and pressure-glued both ways in overlapping fashion.

OTHER POPULAR A & S BAGS

SUPER-RUFF — non-slip bags

LAMO-PAK — moisture barrier bags

LOCK-RITE — sealed valves

DUK-PAK — sheds water

To get the whole A & S bag story — particularly as it applies to your own products — we suggest that you write directly to Arkell & Smiths, Packaging Division, Canajoharie, New York.

ARKELL AND SMITHS

Executive Offices: 500 Fifth Ave., New York 36

Manufacturing Plants at:

Canajoharie, N. Y. • Wellsburg, W. Va.
Mobile, Ala. • Hudson Falls, N. Y.

"The Oldest Name in Paper Bags"

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ON THE JOB: (top to bottom) F-500 load lugger in the quarry makes up to 40 trips a day to crusher. At the plant F-800 spreader loads up. F-800 leaves plant as F-500 dumps quarry load into crusher. F-800 calls on 212-h.p. engine to spread lime over plowed field.

BIG FLEET OWNERS BUY MORE FORD

"FORDS ARE COST CRUSHERS- with an extra ton of payload!"

"The F-800's 212-h.p. engine keeps us from bogging down in freshly-plowed fields," says Charles Conklin of Canaan, Conn.



Mr. Charles Conklin, President of Conklin Limestone Company, says:

"Fords reduce costs on a low profit operation. Our '56 F-800 handles a ton more payload than competitive makes."

Extra ton of payload . . . "We can carry 9 tons in our Ford F-800 spreaders. That's a ton more than we can carry with a competitive make," says Mr. Conklin. "And with a low cost product like limestone, that extra ton means a lot." Payload means a lot in any operation, Mr. Truck Operator. And the Ford F-800 is just one of the Ford Truck line with an eye for better payloads. The new F-800 payload and body allowance is up to 18,445 lbs.!

72,000 miles with a worry-free V-8 engine . . . "We have a '54 F-800 spreader with 72,000 miles. The extent of repair to date has been a spark plug change." Ford Trucks can be counted upon to "take it" under the roughest conditions. That's why *FORD TRUCKS LAST LONGER.*

Powered for the roughest jobs . . . "Our F-800 spreaders tackle some of the roughest terrain in New England," boasts Mr. Conklin. "But, thanks to Ford power, we never get bogged down."

Take a look at the '56 F-800's power plant. Your choice of the 200-h.p. Torque King or the 212-h.p. Torque King Special—the most powerful engine ever offered in a Ford Truck.

So consider *everything* when you go to buy that new truck—initial price, running costs, dependable performance, and resale value. Check with your Ford Dealer and see why Ford Trucks cost less.

MAIL THIS COUPON TODAY!

FREE **FORD Division of FORD MOTOR CO.**
P. O. Box 658, Dearborn, Michigan

Please send me your free 20-page booklet "How to Select the Right Trucks for Construction Work."

NAME _____

ADDRESS _____

CITY _____ STATE _____

T-15 Check here if student ☐

TRUCKS THAN ANY OTHER MAKE

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The Heart of Effective Aggregate Production —a KOLMAN Vibrating Screen



B. L. ANDERSON SCALPING JOB RELIES ON KOLMAN SCREEN

This 7' x 42" Model SB-70 single-deck Kolman Vibrating Screen shown on a scalping operation in the new limestone quarry operated by B. L. Anderson, Inc., near Lawrence, Kansas, is the very heart of the important blending phase of the production of material which must meet the rigid specifications of the Kansas Turnpike. The screen must perform effectively at all times to prevent the formation of a bottle-neck which could disrupt the complete operation.

Dependable, effective screening is always assured with a Kolman Vibrating Screen, as B. L. Anderson, Inc., will testify. Hundreds of other Kolman screens are relied upon daily for trouble-free operation in aggregate producing jobs throughout the country.



WHY KOLMAN SCREENS ARE IDEAL FOR AGGREGATE PRODUCTION—

Floating Action!

Freedom of action that gives full vigorous vibration for clear, accurate separation without clogging or blinding.

Minimum Vibration Transfer!

Force of vibrations is not transmitted to screen frame to damage other equipment or screen itself!

Compact Design!

More screening capacity per square foot than most competitive screens. Added ease of installation.

Priced Right!

Design permits rugged construction without bulky, expensive weight. Few moving parts help keep maintenance costs low for long-run economy. Single and multi-deck models.

WRITE FOR LITERATURE AND PRICES

KOLMAN MANUFACTURING CO.
4200 W. 12th St. Sioux Falls, S.D.

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STANDS UP TO SEVERE USE *and even abuse*

One word describes a Hayward —*ruggedness*. Yes, it's as tough, strong, sturdy as a bucket can be — and even more so. Extreme simplicity, little if any upkeep, high operating efficiency! Details on request. Write! THE HAYWARD COMPANY, 50 Church St., New York 7, N. Y.

HAYWARD BUCKETS

CLAM SHELL · ELECTRIC · ORANGE PEEL · GRAPPLES

famous for performance since 1888

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KEEP ABREAST WITH INDUSTRY TRENDS THROUGH ROCK PRODUCTS

Perfection Steel Body Co., Galion, Ohio, announces the appointment of R. N. Rick as advertising and sales promotion manager. He joined the company and its affiliate, Cobey Corp., in 1947. Beginning in the service department, he subsequently transferred to the sales department. In 1953 he was promoted to assistant general sales manager of the Cobey Corp. In addition to his duties as advertising and sales promotion manager of Perfection Steel Body Co., Mr. Rick will continue as sales manager for Cobey Corp. He will be located at Galion, Ohio, in the combined offices of the two corporations.



R. N. Rick

Richardson Scale Co., Clifton, N. J., has announced the appointment of Robert M. Gatti, formerly service engineer in the Chicago office, as branch manager of the Cincinnati office covering Ohio (except the northwest area), western half of West Virginia, southern Indiana and most of Kentucky. Richard L. Gruber has been named sales and service engineer for the Cincinnati branch.

The Rust Engineering Co., Pittsburgh, Penn., announces the election of George I. Seybold as a vice-president of the company. He was formerly vice-president and assistant general manager of the Chemical Construction Corp., New York, N.Y.

Hydraulic Press Mfg. Co., Mount Gilead, Ohio, and Koehring Co., Milwaukee, Wis., have completed a merger of the two firms. Hydraulic Press will operate as a division of Koehring Co.

Raybestos-Manhattan, Inc., Passaic, N. J., announces the appointment of J. Stewart Munro, vice-president, as president of Raybestos-Manhattan (Canada) Ltd. He succeeds Robert Abbott, who has retired, but remains as a Canadian director of the company. Douglas Pocock, formerly sales manager, has been named vice-president of replacement sales.

A. P. Green Fire Brick Co., Mexico, Mo., has announced the death on June 9 of Allen P. Green, founder and chairman of the board, after an extended illness. He was 80 years old and had served as president from 1910 to 1946, when he became chairman of the board.

The McKay Co., Pittsburgh, Penn., manufacturers of chain and arc welding electrodes, has elected Fred A. Kaufman, vice-president in charge of manufacturing and sales, and Dr. David Helm, vice-president in charge of research, as directors of the company. Mr. Kaufman was also elected to the board of directors of Surface Chemicals, Inc., a wholly owned subsidiary of McKay Co.

Schramm, Inc. West Chester, Penn., manufacturers of air compressors, has started construction of a new building to be used for final assembly, painting and shipping of its equipment.

Drawalloy Corp., York, Penn., has named Bond Marshall as manager of field engineering, specializing in the application and development of automatic and semi-automatic hardfacing wires.

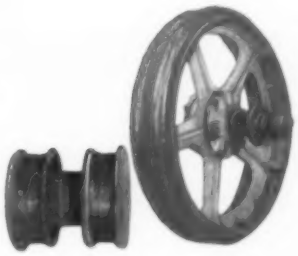
Yuba Mfg. Co., San Francisco, Calif., has elected W. P. Blanchard as vice-president and general manager. Formerly secretary-treasurer, Mr. Blanchard will direct operations at the San Francisco Bay plant, the C & D "Movall" division, and the Stockton Iron Works.

Union Bag & Paper Corp., New York, N. Y., has completed a merger with Camp Manufacturing Co., Franklin, Va. The combined firms will be known as Union Bag-Camp Paper Corp.

YOU CAN'T AFFORD TO DISCARD WORN TRACTOR PARTS



At the Fabick Tractor Co.
Flora, Illinois (above)



In first full month's operation the

AMSCO "550" WELDER
Rebuilt 150
Rollers and Idlers

. . . plus handling other shop work; sure proof of high performance and reliability.

Save up to 50% on replacement costs by rebuilding with AMSCO® AUTOMATIC WELDING

Here's a money-saving way to add a lot of extra service life to worn tractor rollers and idlers. Rebuild and hard-face with Amsco Automatic Welding!

Cost of rebuilding is usually about *half the cost* of a new part. And service life is normally *twice* that of the original unit.

The Amsco "550" Automatic Welder, specially designed for this heavy-duty service, is the answer . . . plus Amsco AW-79 Alloy Steel Electrodes, for use wherever abrasion and high impact are involved.

Contractors can make this easy-to-operate machine pay for itself in short order. *Repair Shops* are finding it the answer for high-performance, service-free operation (see left). Ask your Amsco Distributor for full details on the "550" Automatic Welder and the full line of Amsco Hardfacing Electrodes.

Amsco Welding Products distributed in Canada by Canadian Liquid Air Co., Ltd.

AMERICAN Brake Shoe COMPANY

AMSCO

American Manganese Steel Division · Chicago Heights, Ill.

OTHER PLANTS IN: DENVER, LOS ANGELES, NEW CASTLE, DEL., OAKLAND, CAL., ST. LOUIS, JOLIETTE, QUEBEC

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PROLONGED CONFINEMENT COUNTS

Wouldn't a shot like this pay off in your quarry?



1. Instantaneous pop shots show inevitable bursting effect, in contrast with the confinement obtained in the primary blast.

BLAST DATA:

Height of face	42 ft.
Number of holes	54
Diameter of holes	6 in.
Depth of holes	46 ft.
Burden	16 ft.
Spacing	10 ft.
Stemming	15 ft.
Total explosives	15,000 lbs.
Pattern	Alternate Progressive: 1-2-3-2-3-4-3-4-5- etc.
Loading started	7:00 a.m.
Loading finished	11:00 a.m.
Blast fired	12:15 p.m.



2. Primary blast, fired with Rockmaster millisecond delay electric blasting caps, shows well balanced explosives action.

Atlas explosives and methods made short work of this 42 ft. limestone face, with a minimum of noise and vibration . . . producing a low, well broken muck pile.

Blast site: The M. J. Grove Lime Co., Frederick, Md.

Results? The pictures speak for themselves. Fragmentation was excellent. The blast produced 32,778 tons of rock, well broken for easy, economical digging. *Prolonged confinement* paid off!

Chances are, you can get results like this—the Atlas way. Talk over your specific problems with your Atlas representative. He'll show you the right cost-cutting combination. And write for "Better Blasting," the informative Atlas news-letter on latest materials and methods.



3. Note impressive swelling of the burden—absence of escaping gas and flying rock. Total energy worked behind the burden.

EXPLOSIVES DIVISION

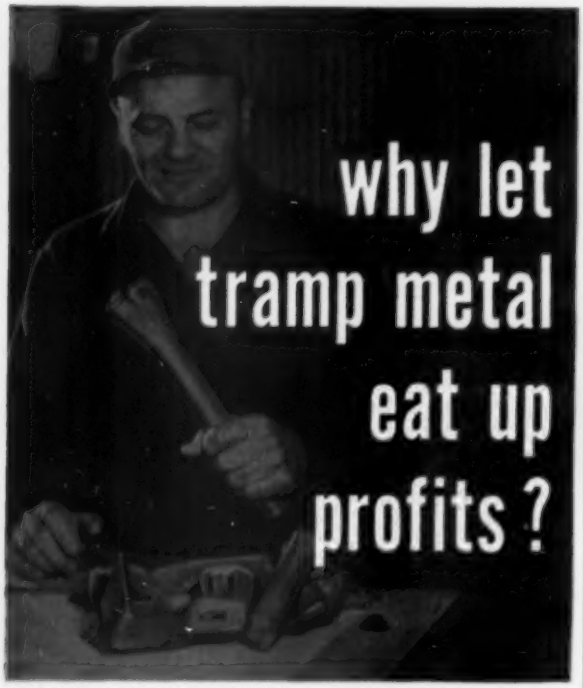
ATLAS POWDER COMPANY

WILMINGTON 99, DELAWARE

offices in principal cities

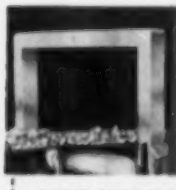


4. Excellent, thorough breakage. A low, 32,778 ton muck pile, ready for easy shoveling and allowing maximum production.



Assortment of tramp metal detected at Lithium Mine of Foote Mineral Co.

Tramp metal, such as manganese steel dipper teeth, drill bits, castings, broken parts that cause damage to hammermills, pump liners and sizing screens, can be automatically detected by the RCA Metal Detector. Installed on your conveyor, it's always on the job, electronically probing out all kinds of tramp metal, both magnetic and non-magnetic. Wired to sound an alarm, spray-mark the metal area or stop the conveyor when trouble threatens, it prevents downtime and repairs from eating up profits, quickly pays for itself. Why not let us make a survey of your plant? Use coupon.



MARK OF RCA QUALITY
ELECTRONIC
METAL DETECTOR

RADIO CORPORATION of AMERICA
Dept. K-206, Building 15-1, Camden, N. J.
In Canada: RCA VICTOR Company Limited, Montreal

☐ Please send me complete information on RCA Metal Detector for use in quarrying and mining.
☐ Have RCA field representative contact me.

NAME_____ TITLE_____
COMPANY_____
ADDRESS_____
CITY_____ ZONE____ STATE_____

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STURDY • PRACTICAL • DEPENDABLE • ECONOMICAL



Furnishes a positive seal for round flexible joints. Used by leading dredging and hydraulic sand-and-gravel operators, and the U. S. Engineering Corps. This Multi-use chain sleeve clamp is easy to apply . . . positive in action. Write for illustrated folder, today.

THE BLACK BROTHERS CO., INC., 505 9th Ave., Mendota, Illinois

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BARGAINS
FROM OUR OPERATIONS

HAMMERMILLS
Two—Pennsylvania, Thor-Ajax, SXR 100, 10" x 55" Opening, capacity 100 TPH #4 Mesh, Reversible Hammers, Excellent condition.

GYRATORY CRUSHERS
Two—Superior McCully 10", 30 TPH at 1¾" setting, 63 TPH at 3½" setting, both crushers are in very good condition.
One-Allis-Chalmers Gates 9K, 21" x 76" in excellent condition.

CRANES
Two—Link Belts, Model K-42, crawler travel, 1½ yd. capacity, 50 ft. booms, and powered by Cummins Diesel Engines, Working Now.

ELECTRIC SHOVEL
MARION 490—2300 Volts 2½ yd. Bucket—Ward Leonard Controls Can be inspected while in Quarry operation.

GAS SHOVEL
THEW-LORAIN—75B, Waukesha Gas Engine, 50 ft. Boom, 1 Yd. Dipper. Here is a bargain in an old shovel in working condition for a job not warranting a big investment.

AIR COMPRESSORS
Stationary from 248 to 518 CFM at 100 lbs., all in working condition.

QUARRY CARS
150 Cars, 24" wheels, 56½" Standard Track Gauge, 10 ton capacity end dumps, spring suspension, inside box dimensions, 103" x 75" x 40", wt. 15,000 lbs. each, very good condition.

PIT CARS
500—Cars, 42" Track Gauge, 4.4 Tons capacity, End Dump—All in good condition.

CATERPILLAR EQUIPMENT
1—Traxcavator T-7, D-8800 Engine, 2½ yd. Bucket, D-7-N Towing Winch, Smooth Pads, Rebuilt Recently.
2—Tractors D-8 with D-13000 Engines and Blade.

Also Available Many Other Items Surplus to our Redi-Mix, Quarry and Coal Mining Operations—Write for Listing:

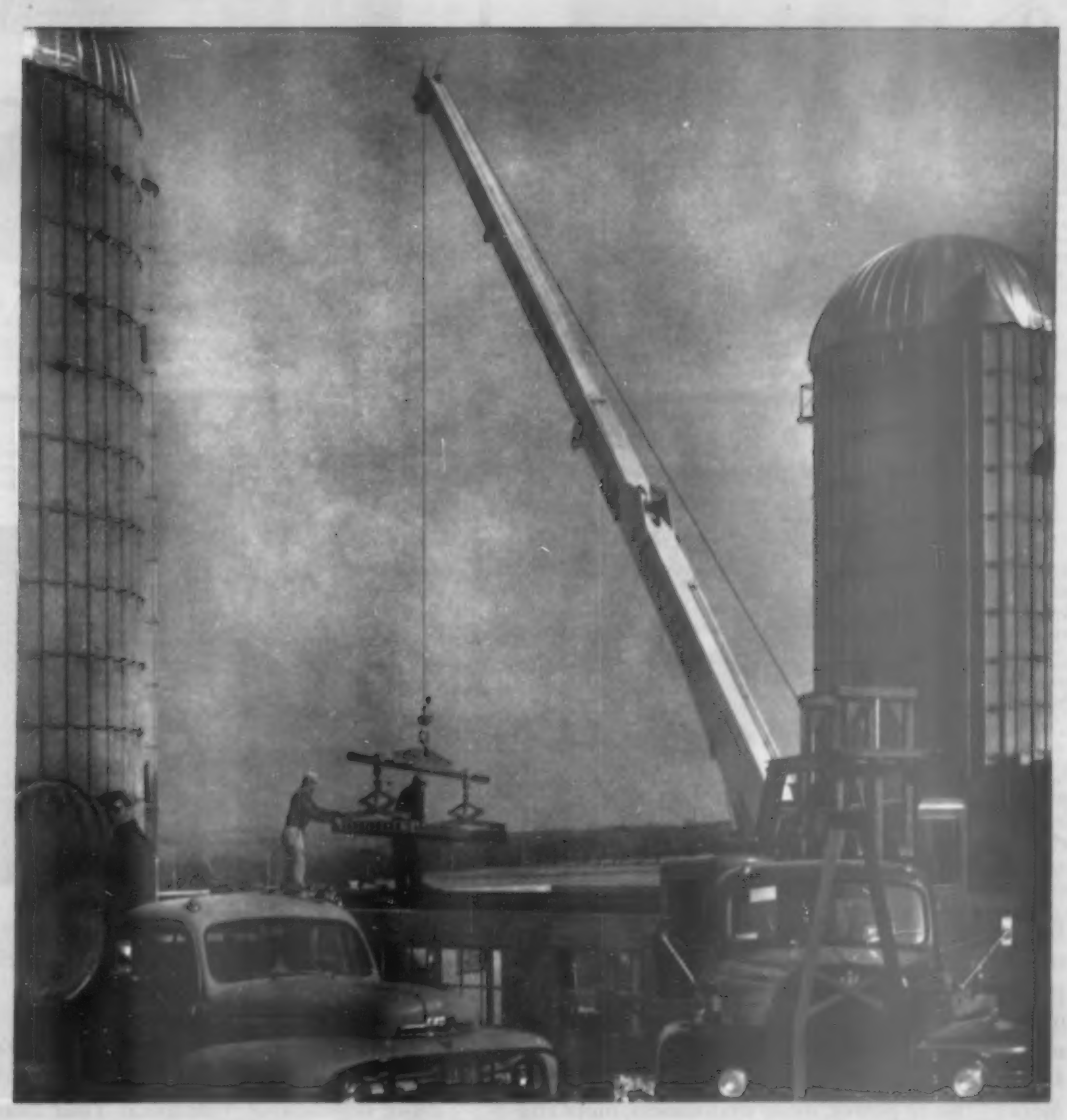
MATERIAL SERVICE CORPORATION
4226 S. LAWNDALE AVENUE LYONS, ILLINOIS
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CONCRETE PRODUCTS

A SECTION OF ROCK PRODUCTS

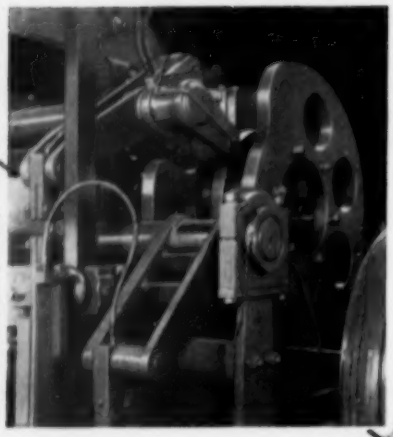
CONCRETE UNITS · READY-MIXED CONCRETE



Installing pre-stressed concrete flooring made by West Allis Concrete Products Co.

4 Big Reasons *Why*

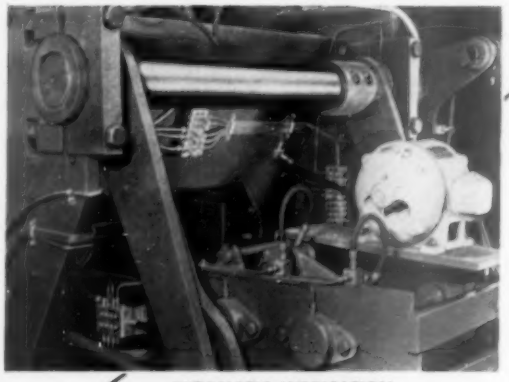
Block Makers Prefer VIBRAPACS



1

CAM OPERATED

The famous Besser cam and roller principle of power application assures dependable operation. The slow revolving cam, with a roller riding on its surface, delivers power with pin point precision and with steady, uninterrupted regularity



2

AUTOMATIC LUBRICATION

The Vibrapac now lubricates itself at regular intervals . . . while it is running. No more downtime for lubrication. No premature wear of insufficiently lubricated parts. And no over lubrication.



3

ANTI-FRICTION BEARINGS

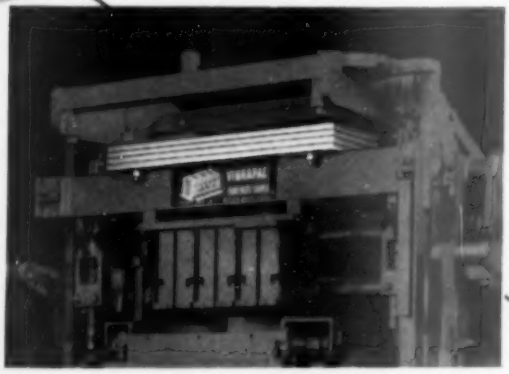
The Vibrapac is completely equipped with anti-friction bearings. Pallet receiver shaft assembly, for example, has a 7½" diameter Timken Roller Bearing. Assures smooth, trouble-free operation and a lifetime of service.



4

2000 LBS. PRESSURE

VIBRATION is under pressure of 2000 pounds. Two 10 hp. high starting torque motors give undirectional vibration under this pressure.



For more than 50 years, block makers have looked to Besser for better block machines. Today's Vibrapac produces high quality block faster and with a minimum of downtime. The four illustrations above explain why the Vibrapac excels. They spell profits for block makers everywhere. The Vibrapac gives more . . . more power, more smoothness, more ruggedness, and, what every block maker is primarily interested in, greater production. No wonder the Vibrapac is universally regarded as the world's leading concrete block machine.

Plan now for increased production of quality block. Replace antiquated, cost-consuming machines with more dependable Vibrapacs. Your nearby Besser representative will gladly give you all the facts.

BESSER Company

World's Leading Manufacturer of Concrete Block Machinery

BOX 135, ALPENA, MICHIGAN, U.S.A.

A-6881-1PBC

INDUSTRY NEWS

Cover Picture

ON THIS MONTH'S CONCRETE PRODUCTS COVER is illustrated the placing of a Spancrete concrete floor slab in a concrete block farm structure. This farm also has concrete silos. This floor slab is made by a special machine on a mass production scale. The unit shown in the illustration is being lowered into place with a Bucyrus-Erie H-5 Hydrocrane.

Piedmont Plant Organized

PIEDMONT BLOCK CO., Jamestown, N. C., has been organized for the manufacture of 65 to 70 styles of block and specialty items. The plant, recently completed on land formerly owned by the Oakdale Cotton Mills, has a capacity of 7000 block per day on one shift and 12,000 per day on two shifts.

A 4-compartment storage silo holds 20 cars of aggregate. The silo is 30-ft. dia. x 32 ft. A Besser block machine in the block manufacturing unit produces a uni-pressed-top block. The kilns occupy 3200-sq. ft. of space in a third building.

Al Flock heads the organization as president. Curtis Laughlin is first vice-president and sales manager; George Lovelace is second vice-president and plant superintendent; and W. R. Amos is secretary-treasurer and office manager.

Maule Adopts Kiln Curing

MAULE INDUSTRIES, INC., Miami, Fla., has instituted the use of kiln curing in about 50 percent of its block production. This company has 12 block machines which produce an average of 16,000,000 8-in. equivalents per year.

A feature of the new curing rooms are the aluminum-insulated doors, manufactured by the Moore Dry Kiln Co. The doors are carrier-operated for quick loading and unloading, and have high insulation qualities which hold heat inside the curing rooms and reduce curing time.

Another of Maule's operations is the batching and delivery of ready-mixed concrete. Central mix plants and dry batchers in several locations permit a flexible routing arrangement for the fleet of mixer trucks. More than a million yards of concrete are delivered in a year. The company manufactures precast joists, slabs, channels and piling, and also operates stone crushing and sand and gravel plants.

Jose A. Ferre is president of Maule Industries and F. K. Foster is vice-president.

Sakrete Firm Purchased

TEXAS INDUSTRIES, INC., Dallas, Texas, has purchased all assets of Twin City Concrete Products Co., Minneapolis, Minn., along with that company's franchised sales territory for Sakrete pre-mixed dry concrete in eight Midwestern states. Included in the sale are plants at Minneapolis, Des Moines, and Kansas City, Kan., and machinery for a fourth plant at a location to be determined.

Announcement of the purchase was made jointly by J. M. Lambert, Twin City president, and Ralph B. Rogers, president of Texas Industries.

Michigan Firm Expands

GRAND RAPIDS GRAVEL CO., Grand Rapids, Mich., has completed a new office building, the last step in an expansion program begun in 1954. The program has included establishment of a third and fourth ready-mixed concrete plant, and a sand, gravel, and crushed stone screening plant.



New battery of curing rooms at Maule Industries, Inc.

CARROLLTON CONCRETE MIX, Saginaw, Mich., has begun operations at a new ready-mixed concrete plant north of Weiss, Mich. The plant, supplied by Erie-Strayer Co., has a 220-cu. yd. materials bin, a 1200-bbl. cement silo, a control room, and a 220-ft. belt conveyor. The company also has purchased three mixer trucks. Carrollton Concrete Mix is operated by Fred P. Langschwager and his sons, Fred and John Langschwager.

TURBOTVILLE BLOCK CO., Turbotville, Penn., is constructing a plant in Horseheads, N. Y., for the manufacture of prestressed concrete slabs and beams and concrete building block units. The 28,000-sq. ft. plant will house the block plant and the prestress operation, and a 2000-sq. ft. warehouse will contain building supplies. Allen G. Stamm is president of the company.

TRANSIT MIX CONCRETE, LTD., a subsidiary of Clarke-Halawa Rock Co., Honolulu, Hawaii, has been incorporated, and capitalized at $100,000. The new firm is operating eight mixer-trucks out of the Clarke-Halawa quarry. Director-officers are C. Robert Clarke, president; Allan S. Clarke, vice-president-treasurer; and Chieko N. Isa, secretary.

BEN C. GERWICK, INC., San Francisco, Calif., has announced plans for a new precast-prestressed concrete plant in the Los Angeles-Long Beach area. Products which will be manufactured include precast-prestressed piles, bridge girders and building members. Ken Sylvester, manager of the firm's Southern California district, will supervise the installation of the new plant.

MIDWEST PRE-STRESSED CONCRETE CO., Springfield, Ill., has purchased a plant at Rochelle, Ill., recently vacated by Austin-Western Co., a subsidiary of Baldwin-Lima-Hamilton Corp. Operations at the Rochelle plant are getting underway this month, employing from 75 to 100 persons. E. L. Peck is plant manager.

DONALD R. LAPORTE, Holyoke, Mass., has opened a plant for the manufacture of "hydro-stone," a concrete block simulating handcut sandstone. The manufacturer claims the product to be fireproof, waterproof, and colorfast.

WINCHESTER READY MIX, Winchester, Ky., has been formed by James Clark, Stanley Meers and M. D. Royse Jr. The new plant includes a 400-bbl. cement silo and a 100-ton rock and sand bin.



New thirteen-year, multi-billion OPENS VAST NEW MARKET FOR



Typical casting bed where structurals are prestressed and cast. The operation is continuous and turns out prefabricated structural members in hours instead of weeks.

"Big" takes on a new dimension when applied to the National Highway Program. 40,000 miles of roads. 500,000 jobs. 32½ billion dollars. And about 300,000 new bridges, most of which can be built much faster and more economically with prestressed concrete than with any competitive building material.

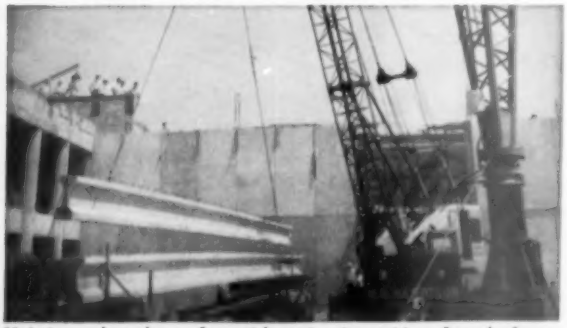
It's history's biggest order for bridges. A giant demand for present makers of prestressed concrete. And a tremendous opportunity for those who decide to go into the business now.

For prestressed concrete construction answers this bridge need as nothing else can. In high degree of strength and permanence. Speed of construction. Savings in time and money. More profit for suppliers and constructors—greater value for taxpayers.

Bridges and highway slabs are just two of many uses where concrete prestressed with Union Tufwire



Prestressed beams ready for transportation by truck, rail or barge. The size of prestressed concrete members which can be cast in permanent site beds is limited only by transportation facilities and regulations. In on-site operations, prestressed girder spans up to 312 feet have been cast.



Hoisting a long beam for quick setting in position. Speed of construction is one of many prestressed concrete advantages. Time saved is money saved—and after construction there are further economies in maintenance.



dollar highway program
PRESTRESSED CONCRETE MAKERS

strand and wire is proving its structural and economic advantages. Others range from fence posts to complete buildings and warehouses. Almost anything that concrete will do—it will do better when prestressed with Union Tufwire.

UNION Tufwire...
Tendon of Strength in Prestressed Concrete

Union Wire Rope Corporation is geared to the needs of the vast national highway program. Just as we've kept in step with the seven-league strides of prestressed concrete construction since the trend shaped up ten years ago.

Union Tufwire strand and wire is being supplied with on-schedule efficiency to such jobs as the Lake Pontchartrain causeway (longest highway bridge in the world; pretensioned with 3,700 tons of Tufwire strand.) Tufwire is being delivered just as promptly to a rapidly growing list of other customers, large and small. Our expanding plant capacity and Mid-America location assure you that sort of service—today and in the future.

If you're now in the business of making prestressed concrete let our engineering department and research laboratory give you and your consulting engineers a lift with any prestressing problem.

If you're among those who see the big opportunity opening up for new makers of prestressed concrete, let us help you explore the possibilities. It may well be the most important decision you ever made!

union Wire Rope corporation

Specialists in high carbon wire, wire rope, braided wire fabric, stress-relieved wire and strand
2302 Manchester Avenue, Kansas City 26, Missouri

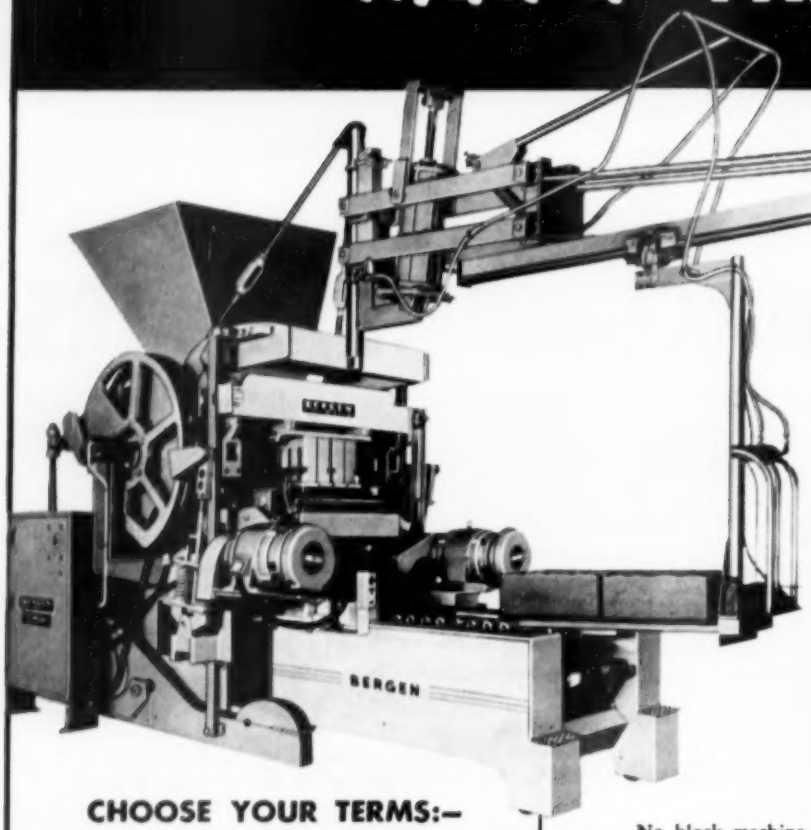


Finished section of the 24-mile bridge which is spanning Lake Pontchartrain (near New Orleans) in record time. Each slab in this colossal causeway is reinforced with 175 Union Tufwire strands.



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NO BETTER Block Machine than a TRI-MATIC



Can't be beat for

power, ruggedness and production

CHOOSE YOUR TERMS:–

1. **CASH**
2. **TIME PAYMENTS**
3. **"LEASE-WITH-OPTION-TO-BUY" CONTRACT**

(NON-ROYALTY, FIXED MONTHLY PAYMENT)

No block machine on the market today exceeds the TRI-MATIC for the essential features of heavy-duty construction, designed for and producing the finest block at maximum speed.

If you want high production, Tri-Matic is designed to run without strain at rates up to 6 mold cycles per minute, yielding an average of 10,000 — 8" equivalent units per typical 10 hour day. If you want power and ruggedness, just check the size of all motors, shafts, pulleys, etc. . . . AND — not one ounce of quality workmanship or material is sacrificed ANYWHERE on a TRI-MATIC.

Compare a TRI-MATIC WITH ANY MACHINE ON THE MARKET—you'll see why the BERGEN TRI-MATIC can't be beat!

BERGEN
MACHINE & TOOL CO., INC.

NUTLEY, NEW JERSEY

Cable Address: "BERGENCO" (Nutley, N. J.)

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CHAIN BELT

REX

COMPANY



ADJUSTA-WATE

MOTO-MIXERS



What's the "Price Tag" on Leadership?...

Actually no price can measure the value of Rex leadership ... the design and performance contributions that have pioneered virtually every development in truck mixers. To you, the ready-mix operator, there is no "price tag" on this leadership ... you pay no premium to get the finest!

To Rex, the price of leadership is substantial. We must always go first ... be ahead of the field ... originate, test and prove the new and the better. It would be more economical, in time, effort and money, to rest content ... let others assume the burden. But, we've the habit of leadership and our faith in the future of ready-mix concrete — your future — constantly drives us to seek better methods ... better equipment to serve your needs.

Who can measure the value of the many Rex contributions since we built our first truck mixer: the chain drum drive, the 3-point drum mounting, the ball and socket front drum bearing, Manten steel drums, long-life transmissions, bolted-in mixing blades, drop-forged drum rollers, larger size mixers, automatic throttle control, electronic strain gauge testing, the Adjusta-Wate design principle, and the many others? It's beyond computation. And, while

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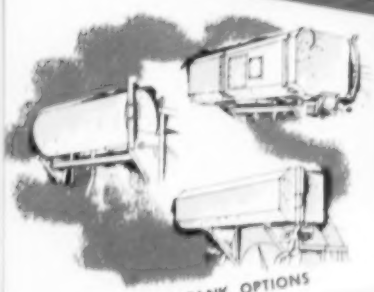
many of these cost-saving, profit-making developments are common to most truck mixers today, others are still exclusive on Rex machines. But, as history repeats itself, you will find that these profit making features, too, will become a standard of the industry.

Wouldn't you be wise to work with these "years-ahead" features on your truck mixers — not be forced to work against them in your business?

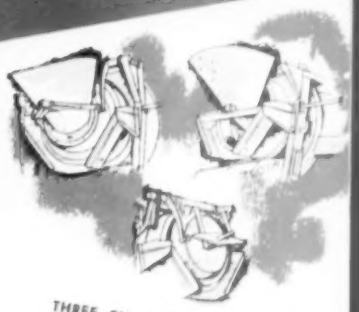
YOU CAN AFFORD THE BEST . . . .

REX ADJUSTA-WATE MOTO-MIXERS

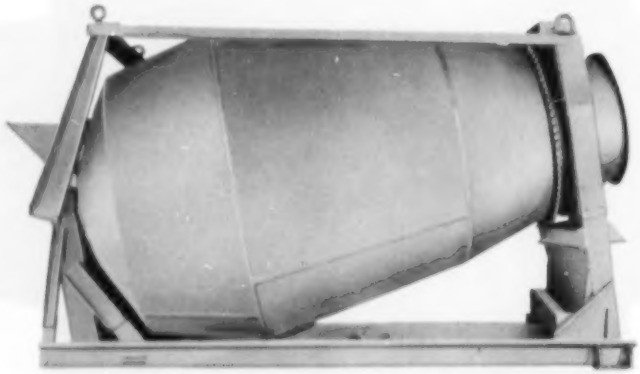
Yes, leadership costs you no more! There is a Rex® Adjusta-Wate to fit your operating needs and your pocketbook. The Adjusta-Wate design principle gives you a basic machine of unequaled quality. Then you select balanced components to suit your requirements . . . water tanks, water entry system, charging equipment and power transmission. You can add additional accessories if you desire. You tailor your mixers to your needs . . . and the price you desire. AND, you get the quality . . . the performance . . . the service you expect from the leader.



THREE WATER TANK OPTIONS

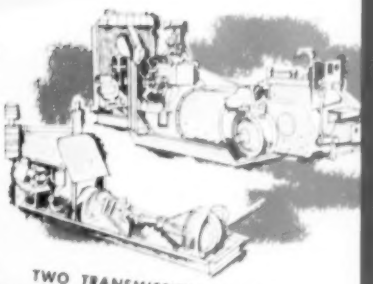


THREE CHARGING OPTIONS





TWO WATER SYSTEM OPTIONS



TWO TRANSMISSION OPTIONS

and a wide range of accessories

DON'T PENALIZE YOUR PROFITS

Rex® Adjusta-Wate gives you the important three that add up to fastest operation . . . more trips per day.

CONSTRUCTION REX MACHINERY

ADJUSTA-WATE MOTO-MIXERS®

LEADERSHIP THROUGH CREATIVE ENGINEERING

CHAIN BELT COMPANY / 4695 W. Greenfield Ave., Milwaukee 1, Wis.

Litho in U.S.A.

2-WAY RADIO

makes satisfied customers for Travers Supply Co. of Decatur, Ill.



Photos Courtesy Decatur Herald Review

SPEEDS READY-MIX CONCRETE DELIVERY

Direct from the site, Ralph Calfee radios dispatcher John Mosser that another yard is needed to complete the job.

HERE'S HOW RADIO HELPS YOU

John Stoune, Travers' manager, was arriving at a job in his radio equipped station wagon. Dispatcher Jim Mosser radioed, wondering about a gravel truck due on the job. Stoune answered, "He's dumping the load now—should be back in 20 minutes." Dispatcher Mosser knew exactly when he could schedule that truck for another job. A mixer returning to the plant was heard reporting mechanical trouble. A service truck was immediately sent to him and a spare truck dispatched to fill his next order—as much as an hour saved, not to mention the finisher's temper if he had run out of cement.

If forms aren't ready, the dispatcher gets the report in 30 seconds and can direct the mixer to another site nearby. When an estimate runs short, a fast radio call—direct from the job—gets the concrete there to finish the job. Loose ends at the end of the day are cleaned up easier with radio—drivers and batch plant men get home on time, and expensive overtime payroll is slashed.

With constant dispatcher contact and control, every truck does a bigger job every day, making a more efficient, more profitable operation. And customers are kept serviced, happy and *loyal*.

HERE'S WHY MOTOROLA DOES THE JOB BETTER

Motorola consistently supplies more mobile and portable radio than all others combined . . . proof of acceptance, experience and quality. The only COMPLETE radio communications service—specialized engineering . . . product . . . customer service . . . parts . . . installation . . . maintenance . . . finance . . . lease.

VERSATILE—Motorola produces the greatest variety of 2-way radio equipment available—equipment that can be combined to form a custom-made system at production line prices.

RUGGED—It is built to take the severe beating that any ready-mix work imposes on it—proven in use for long life, dependability and economy.

SERVICE—There is a Motorola Service Station near you. Motorola offers the most complete national service set-up—700 Authorized Service Stations, on call 24 hours a day.

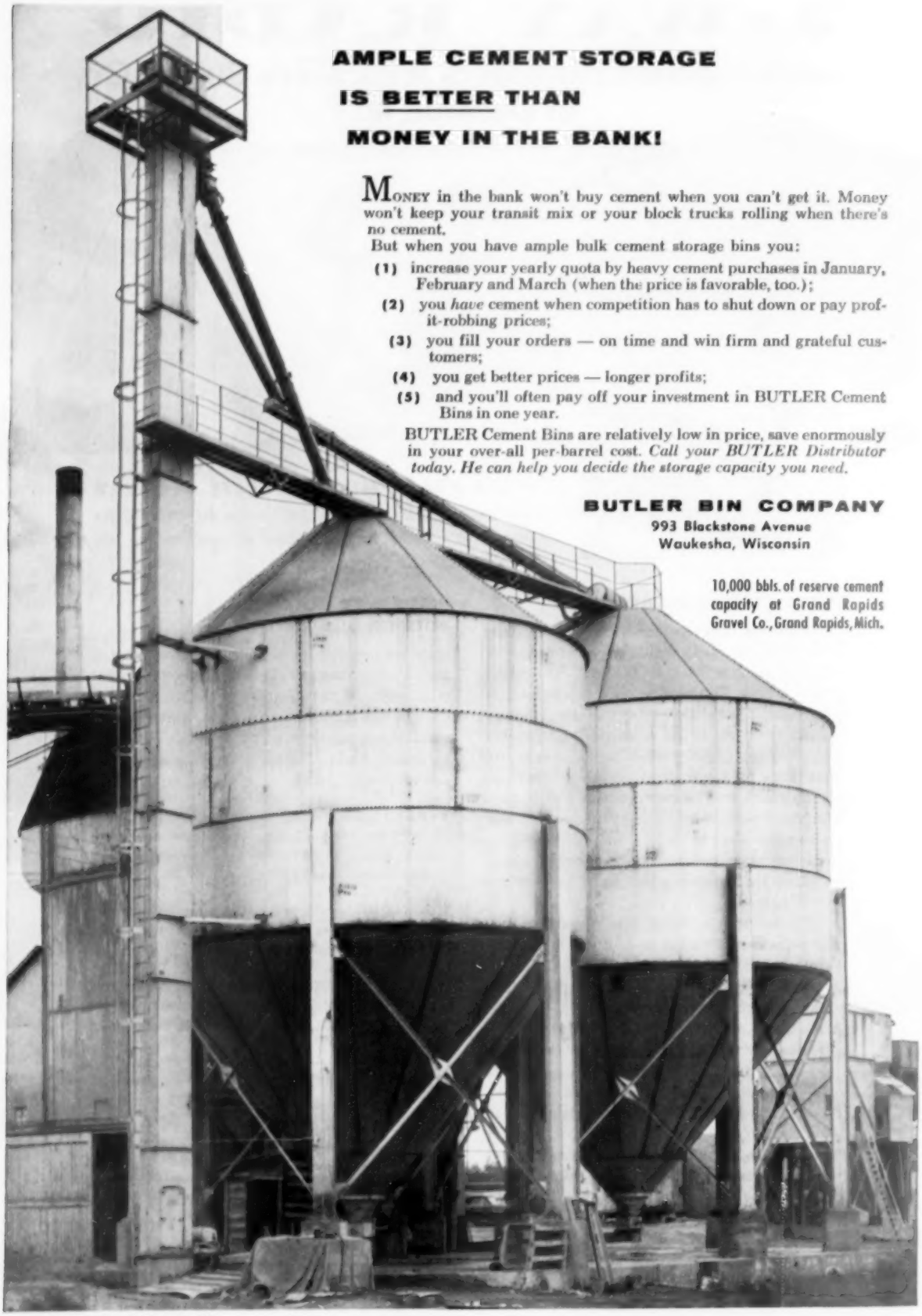
TERMS—You can have Motorola 2-way radio on purchase, time payment, or lease (with or without equity).

Get the *full* facts from a Motorola Communications Engineer. Write, phone or wire TODAY!

MOTOROLA COMMUNICATIONS & ELECTRONICS, INC.

A Subsidiary of Motorola, Inc., 4501 Augusta Boulevard, Chicago 51, Illinois

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AMPLE CEMENT STORAGE IS BETTER THAN MONEY IN THE BANK!

MONEY in the bank won't buy cement when you can't get it. Money won't keep your transit mix or your block trucks rolling when there's no cement.

But when you have ample bulk cement storage bins you:

(1) increase your yearly quota by heavy cement purchases in January, February and March (when the price is favorable, too.);

(2) you *have* cement when competition has to shut down or pay profit-robbing prices;

(3) you fill your orders — on time and win firm and grateful customers;

(4) you get better prices — longer profits;

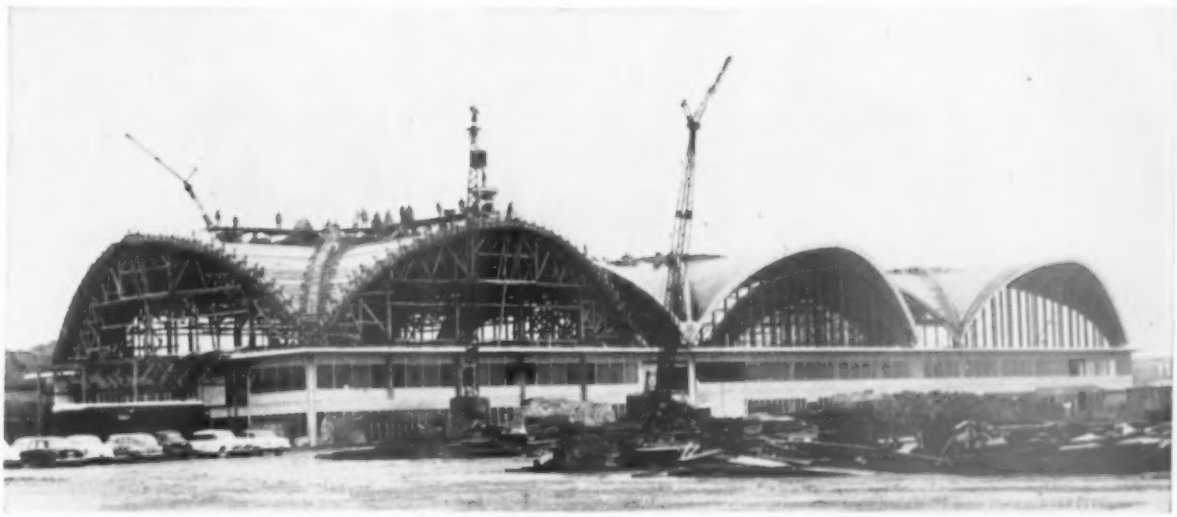
(5) and you'll often pay off your investment in BUTLER Cement Bins in one year.

BUTLER Cement Bins are relatively low in price, save enormously in your over-all per-barrel cost. *Call your BUTLER Distributor today. He can help you decide the storage capacity you need.*

BUTLER BIN COMPANY
993 Blackstone Avenue
Waukesha, Wisconsin

10,000 bbls. of reserve cement capacity at Grand Rapids Gravel Co., Grand Rapids, Mich.

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HELLMUTH, YAMANSKI & LEINWEBER, St. Louis, architects; Wm. C. E. Baker, St. Louis, engineer. Portable false work fabricated by Timber Structures Inc., Portland, Ore., to design of Roberts & Schaefer Co., Chicago, Ill. L&R Construction Co., Inc., St. Louis, Mo., contractor.

It was pouring when they roofed St. Louis Airport terminal

THREE SECTIONS of intersecting thin-shell concrete vaults, supported only at their four corners and cast as a unit in one continuous pour, form the unconventional roof of the otherwise conventionally constructed Lambert-St. Louis Municipal Airport Terminal.

Each section covers a 14,400 sq. ft. area. The bays between the arches bring the total roof area to 420′ x 120′. The shells are 32′ high at crown and of 4½″ uniform thickness. Their arch ribs are 18″ wide and taper from 10′ depth at corners to 3′ 9″ at top.

Each roof section, including ribs, required 400 cu. yds. of concrete. To cast them in one pour called for careful preparation. Two cranes with buckets and a hoisting tower delivering to concrete buggies placed the first section. Adding two more cranes (one at each corner) cut placement time in half on the other two sections.

An uninterrupted flow of specification concrete was essential to the operation. It was insured by on-schedule deliveries in truck mixers having proper design, capacity, mixing speed and accuracy of water control as certified by Bureau Rating Plate.



BOLTS THROUGH CONCRETE BLOCKS placed between rib forms and deck form tie forms together. Shell and ribs were poured at same time. C&E Staff Photos.



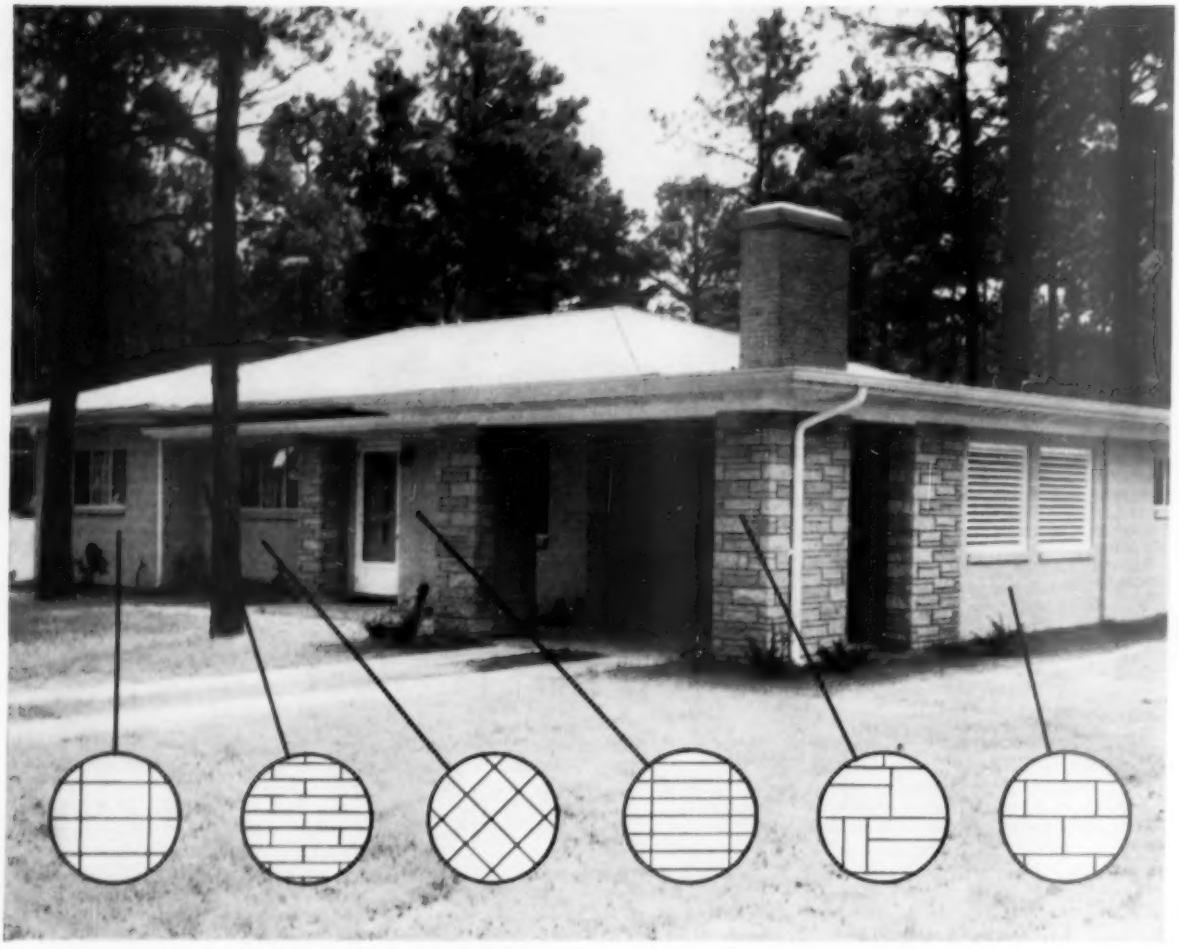
FALSEWORK SYSTEM was designed in 11 separate sections to roll on rails from one pour to next.



You have a right to insist on this Rating Plate. It certifies compliance with the high industry standards maintained for your protection by the Truck Mixer Manufacturers Bureau.

BLAW-KNOX CONSTRUCTION EQUIPMENT DIV.
Mattoon, Ill.
CHAIN BELT COMPANY
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WILLARD CONCRETE MACHINERY CO., LTD.
Lynwood, Calif.
WORTHINGTON CORPORATION
Plainfield, N. J.

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. . . opportunity knocks six times!

New architectural effects are constantly being created with modern concrete units of various shapes and textures. And each new design contributes to the rapidly increasing acceptance of exposed concrete masonry for exteriors.

Here are six examples that combine to give this modest home a high-priced look:

1. 8" x 16" block—stacked bond
2. Split block—running bond
3. 8" x 8" block—diamond pattern
4. 4" x 16" block—stacked bond
5. Split block—ashlar pattern
6. 8" x 16" block—running bond

When you suggest imaginative combinations like this for your masonry units, you step out in front of competition . . . develop opportunities that pay off in easier, more profitable sales.

For the most profitable production, include Lehigh Cements in your plans. Remember, there's a Lehigh Cement to help you produce quality units with *any* manufacturing process.



- LEHIGH PORTLAND CEMENT
- LEHIGH EARLY STRENGTH CEMENT
- LEHIGH MORTAR CEMENT
- LEHIGH AIR-ENTRAINING CEMENT

LEHIGH PORTLAND CEMENT COMPANY
Allentown, Pa.

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Russia's Experiments With Autoclaved Foamed Silicate Products

By I. T. KUDRYASHOV*

Autoclaved cellular concretes (foam concrete, foam silicate, etc.) play a double role as structural units and insulating material in helping to solve the problem of weight reduction and mass production in the construction industry.

The weight of large wall panels made of cellular concrete is from 67 to 80 percent less than similar units made of brick or reinforced concrete. Investigations into the merits of autoclave cellular concrete with a cement base (foam concrete) were carried on in the U.S.S.R. in 1936-1938, and industrial production began in 1938.

Similar tests of autoclave cellular concrete with a lime base (foam silicate) were undertaken in 1939-1940, while the manufacture of panels was started in 1944.

Investigations and practical construction application have indicated that the best base for autoclave cellular concrete is not cement, but crushed quicklime, because lime may be obtained almost everywhere, and it is a more active binding agent than cement in the autoclave curing process.

For example, the optimum cement and sand ratio for foam concrete, having a cubic weight of from 600 to1000 kg. per cu. m., averages between 1:1 and 1:2, while the optimum lime-sand ratio for foam silicates of a similar cubic weight, averages from 1:3 to 1:4. Hence, the amount of lime used per cubic meter of foam silicate is half that of cement required in the production of one cu. m. of foam concrete.

This may be explained by the following laws.

The minerals that make up cement (C_3S, C_2S, C_3A, C_4AF, and others), due to the high temperature of the pressure-steaming process, react more readily to the water content than under ordinary conditions; but the colloidal and crystal structure of the resulting materials does not differ in the main from cement hardened under normal temperature ($Ca(OH)_2$, $2CaO \cdot SiO_2 \cdot nH_2O$, $3CaO \cdot Al_2O_3 \cdot nH_2O$, and others.

$Ca(OH)_2$, evolved in the autoclave during the process of cement hydration, reacts with the SiO_2 in the sand (or another silica component), resulting in the formation of calcium hydrosilicate ($xCaO \cdot ySiO_2 \cdot nH_2O$). Under ordinary conditions of cement hardening, such a reaction is of minor importance.

During the process of cement hydration, an average 10 percent-15 percent $Ca(OH)_2$ content of the weight of the cement is evolved. Hence, the additional reaction between $Ca(OH)_2$ and SiO_2 must be small as compared with the basic reactions that take place during an accelerated process of cement hydration.

According to Menzel* samples of cement-sand mortars, containing an optimum addition of sand (30 percent), after undergoing steam pressure treatment displayed 25 percent higher compressive strength than similar samples of pure cement grout (without sand).

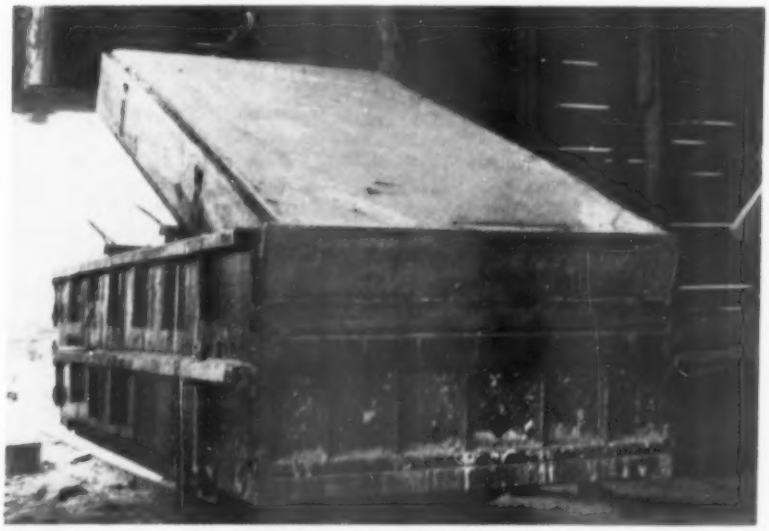
From this it follows, that the hardening of foam concrete is primarily due to accelerated cement hydration, while the share of new compounds, evolved only from the autoclave process, is equal to 25 percent.

Therefore, the strength of autoclave concrete (without foam) with a cement base, for instance, is on the average double that of nonautoclave concrete of the same composition, moist-cured for 28 days, while steam-pressured silicate with a lime base is many times stronger than nonautoclave silicate, cured without steaming.

The strength of autoclave foam concrete is three to five times that of or-

Candidate of Technical Sciences, Central Research Institute of Industrial Construction, Moscow, U.S.S.R.

*See article by K. A. Menzel, Journal of the American Concrete Institute, No. 5, 1936.



Raising foam-silicate panel from mold



Foam-silicate partition panel

dinary foam concrete, while steam-pressure foam silicate is 20 to 30 times that of foam silicate cured in the ordinary way for 28 days.

According to Yung,[1] a 6-hr. high pressure steam curing of lime-sand mortar at 8 atm., accelerates the chemical reactions between $Ca(OH)_2$ and SiO_2 not less than 2^{15} times as compared with ordinary curing at a temperature of +20 deg. C.; such steam treatment is equal to ordinary curing at a temperature of +20 deg. C. during a period of

$$\frac{6 \times 2^{15}}{24 \times 365} = 20 \text{ years.}$$

Another important factor in the autoclave method is the type of lime used.

Research carried on in the U.S.S.R.[2] has demonstrated that crushed unslaked lime is best for the autoclave processing of silicate or foam silicate.

This is explained by the fact that during the slaking of crushed quicklime, when the lime is dissolved in a given amount of water it forms a colloidal solution of calcium hydrate. The resulting quick and violent supersaturation of the colloidal solution causes coagulation and jelling, followed by consolidation or packing of the calcium hydrate particles, and an increase in the strength of the hardening lime due to the penetration of the water into the grains of the mixture and a consequent decrease of the water-lime ratio during the process of slaking.

With the pressure-steamed process, the jelled mass is transformed into durable, crystalline calcium hydrosilicate, which would otherwise, under ordinary conditions, take a long time to form.

Furthermore, an increase in the resilience of the air is achieved within the cells of the foam silicate mixture, thus excluding slump, or settlement of the cellular mass when poured into molds.

As a result of technology research in the manufacture of foam silicate, carried out by our institute in 1940-1941,[3] the following principles were established:

The water-binder ratio in foam silicate (i.e., the weight of water proportion to the combined weight of the lime and sand), is higher the less its cubic weight; the higher the lime proportion, the finer the lime and sand are crushed, and the higher the temperature activity of the lime (the maximum temperature during the slaking process).

Each fixed proportion of lime and sand has its own definite water-binder ratio limit which, when strictly observed, prevents both settlement (slump) or swelling (bulging) in the foam silicate mixture. Any decrease in this water-binder ratio causes bulging in the cellular mass, while an increase in the water-binder ratio causes the mass to slump.

The amount of lime per cu. m. of foam silicate increases under the following circumstances: with a decrease in the CaO + MgO content and a corresponding lessening of lime activity; when the lime and sand are poorly crushed; with a decrease of the SiO_2 content in the sand.

To achieve the best results in the autoclave processing of foam silicate, the CaO content of the lime should be not less than 80 percent, the SiO_2 content of the sand—not less than 90 percent, the MgO content should be limited to not more than 2 percent, while the lime or sand remaining on a sieve, containing 900 openings to the square cm., should not exceed 1 to 2 percent.

The following data is the result of research work in the technology of autoclave foam silicate, carried on in the Central Research Institute of Industrial Construction from 1952 till 1955. The cellular mixture was prepared in a laboratory model of a double-drum foam-concrete mixer having a 10-liter capacity.

Six 10 x 10 x 10 cm. foam silicate sample cubes were prepared, alike in all respects. Before being steamed, the block were cured under laboratory conditions for from 16 to 20 hr.

The samples were steamed in a 50-liter laboratory autoclave, the operation being automatically controlled by a self-recording device.

Following the steaming process, the samples were dried at a temperature of 100 deg. C. until they attained a permanent weight. Compression tests of the samples were carried out with the aid of a 20-ton hydraulic press.

In computing the final results of the compression tests, the ultimate strength of the samples was calculated for the middle cubic weights (600, 800 and 1000kg. per cu. m.), alike for the given group of samples, by the method of interpolation.This allowed strength comparisons of the samples for their various cubic weights.

The following tables (Nos. 1 and 2), give data as to the chemical and granulometric composition of the lime and sand used.

Table 1:

Material	Content							
	Free moisture	Ignition Loss	SiO_2	Al_2O_3	Fe_2O_3	CaO	MgO	SO_3
unslaked lime	1.12	7.04	1.7	0.48	0.83	80.9	6.09	2.12
sand	—	0.25	88.8	8.26	—	0.85	1.33	1.90

Table 2:

Material	Remaining in the Sieve (%)		Passed Through the Sieve 4,900 openings per $cm.^2$	Time of Slaking in min.	Temperature of Slaking
	900 openings per $cm.^2$	4,900 openings per $cm.^2$			
unslaked lime	1.5	4.8	84.4	14	92°
sand	1.6	6.2	92.0	—	—

The following permanent and changeable factors were taken into account for the purpose of investigating the composition of the foam silicate for the given materials:

(a) Cubic weight of foam silicate—600, 800 and 1000 kg. per cu. m.

(b) Lime-sand ratio (by weight)—1:3; 1:3½; 1:4; 1:4½; 1:5.

(c) Water-binder Ratio,—five variants, three of which gave no slump and underwent the steam treatment.

(d) Six 10 x 10 x 10 cm. samples, alike in all respects. The steaming cycle amounted to 6 + 4 + 4 hr.* The maximum steam pressure was equal to 8 atmospheres.

The results of the tests are given in table 3, page 149.

From this data the following conclusions regarding the production technology of foam silicate may be drawn:

(1) We err very little by stating that the maximum water-binder ratio allowing neither slump nor bulging of the cellular mass is also the most favorable water-binder ratio for attaining durability of the material;

(2) For three cubic weight groups of foam silicates (600, 800 and 1000 kg. per cu. m.) the best proportions for lime and finely-crushed sand may be found within the limits of from 1:3 to 1:3½, that is, a ratio not dependent on the cubic weight of the foam silicate;

(3) For the given materials at a 4-hour steaming under a pressure of 8 atmospheres, the strength of foam

(1) V. N. Yung. The Elements of Binding Materials Technology; State Publishers of Building Materials Literature, Moscow, 1951.

(2) B. V. Osin, "Unslaked Lime, a New Binding Agent," State Publishers of Building Materials Literature. Moscow, 1954.

(3) I. T. Kudryashov, "Cellular Concretes and Their Use In Construction," State Publishers of Building Materials Literature, Moscow, 1949.

*Six hours,—raising the steam pressure in the autoclave to the maximum; 4 hr.,—the time of the steaming process proper at the maximum pressure; 4 hr.,—lowering of the steam pressure to normal atmospheric pressure.

silicate is: 45 kg. per sq. cm. for a cubic weight of 600 kg. per cu. m.; 95 kg. per sq. cm. for a cubic weight of 800 kg. per cu. m.; and 155 kg. per sq. cm. for a cubic weight of 1000 kg. per cu. m.

Furthermore, a study was made of the influence of the CaO + MgO content, and the effect of temperature and lime slaking velocity on the durability of the foam silicate.

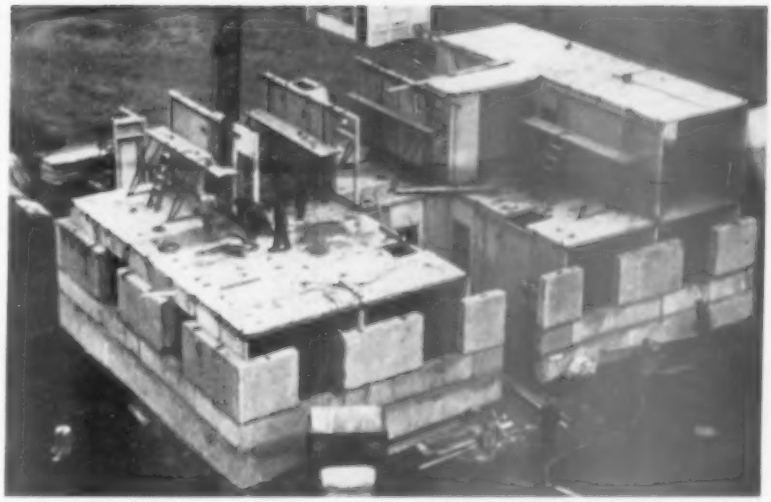
Three types of unslaked limes were taken for the tests:

(a) Quick-slaking, which achieves a slaking temperature of 67 deg. C. in 13 min. and with an 88.2 percent CaO + MgO content;

(b) Medium-slaking, which reaches a slaking temperature of 42 deg. C. in 28 min. and with a 74.5 percent CaO + MgO content;

(c) Slow-slaking, achieving a temperature of 36 deg. C. in 35 minutes and having a 60.1 percent CaO + MgO content.

The cubic weight of foam silicate after drying is 800 kg. per cu. m. Three variants of lime-sand proportion were taken; 1:2, 1:3 and 1:4. A cellular mixture was made of each of the three, each in its turn being prepared in three water-binder ratios, differing from each other by 0.03. The steaming cycle was 4 + 5 + 4 hr.; a maximum steam pressure of 6 atmospheres was used (due to technical circumstances, an 8 atmosphere pressure could not be achieved).



Erecting a three-story structure, using foam-silicate panels

The following conclusions were arrived at from the data received:

(1) Slaking velocity and temperature activity of quick lime are in direct relationship to the CaO + MgO content: the more CaO + MgO there is in the lime, the faster is the slaking and the higher its temperature activity;

(2) The more active the quicklime, the leaner should the mixture be for the foam silicate; however, the CaO + MgO content of the mixture must equal 18 - 20% of the dry materials' weight;

(3) The more active the quicklime the larger will be the remainder of free CaO in the foam silicate after the steaming treatment.

Furthermore, a study was made of the influence of the age of the quicklime on the strength of the foam silicate.

Quicklime was aged for 1, 10 and 20 days.

The lime was stored in open metal bins. The content of hydrated lime in the material when stored for one day was 0 percent; for 10 days—25 percent; and for 20 days—50 percent.

A 4 + 6 + 4-hr. cycle was taken for the autoclave processing, using a maximum steam pressure of 6 atmospheres.

The following conclusions are the results of the tests:

(1) The age of the quicklime has no influence on the strength of the foam silicate nor on the optimum lime-content in the foam silicate mixture;

(2) Barring slump of the cellular mass, the presence or absence of hydrated lime in the quicklime, has no practical effect on the strength of pressure-steamed foam silicate.

(3) The age of quicklime, determined by the amount of hydrated lime in the mass, has no bearing on the most favorable lime sand ratio.

From these tests the conclusion may be drawn that the primary role of quicklime consists in ensuring accelerated binding of the cellular mass before steaming; no effect has been found on the hardening of foam silicate by the quicklime during the process of steaming.

(Continued on page 171)

Table 3:

Lime-sand proportion (by weight)	Water-binder Ratio	Ultimate Strength in Compression (at gross weights of: 600 kg/m³ kg.	800 kg/m³ per sq.c m.	1,000 kg/m³ kg/m³)
1:3	0.50	25.1	—	—
1:3	0.53	34.3	—	—
1:3	0.56	38.6	—	—
1:3½	0.47	32.5	—	—
1:3½	0.50	37.8	—	—
1:3½	0.53	45.3	—	—
1:4	0.44	30.2	—	—
1:4	0.47	33.0	—	—
1:4	0.50	37.4	—	—
1:4½	0.42	28.0	—	—
1:4½	0.45	31.2	—	—
1:4½	0.48	33.9	—	—
1:5	0.39	24.9	—	—
1:5	0.42	31.5	—	—
1:5	0.45	38.1	—	—
1:3	0.45	—	78.8	—
1:3	0.48	—	88.5	—
1:3	0.51	—	91.3	—
1:3½	0.42	—	83.6	—
1:3½	0.45	—	88.7	—
1:3½	0.48	—	98.8	—
1:4	0.40	—	69.5	—
1:4	0.43	—	74.2	—
1:4	0.46	—	78.4	—
1:4½	0.39	—	52.8	—
1:4½	0.42	—	56.8	—
1:4½	0.45	—	57.9	—
1:5	0.38	—	39.5	—
1:5	0.41	—	45.7	—
1:5	0.44	—	51.1	—
1:3	0.39	—	—	136.7
1:3	0.42	—	—	146.6
1:3	0.45	—	—	155.6
1:3½	0.37	—	—	127.0
1:3½	0.40	—	—	126.6
1:3½	0.43	—	—	133.9
1:4	0.36	—	—	132.6
1:4	0.39	—	—	117.6
1:4	0.42	—	—	125.9
1:4½	0.35	—	—	118.6
1:4½	0.38	—	—	123.6
1:4½	0.41	—	—	103.9
1:5	0.34	—	—	100.6
1:5	0.37	—	—	110.6
1:5	0.40	—	—	108.6



Aerial view of batching plant, foreground, with aggregate storage in the background

Special Types of Concrete Provided As A Community Service

NEW PLANT

. . . of Empire Builders Supply Co., has 6-cu. yd. central mixer, large open storage for variety of sizes with reclaiming tunnel belt conveyor. Trucks are radio-equipped

By GEORGE C. LINDSAY

ABILITY TO PRODUCE SPECIAL TYPES of ready-mixed concrete, designed for use under special conditions by local industries, is the result of flexibility built into Empire Builders Supply Company's new central-mix plant at Niagara Falls, N. Y. Other features include a 6-cu. yd. Smith tilting mixer to provide preparation of quality controlled batches at the plant, a complete conveyor materials handling system, and use of only crushed limestone and Great Lakes concrete sand as aggregates in normal batches. Telautograph equipment is available for accurate and rapid transmission of orders from the dispatcher's office to the batcher operator. Two-way radio is being installed on 10 of the company's mixer trucks for better control of delivery service.

The new Butler plant, designed by L. S. Bernstein, consulting engineer, began operation October 1, 1955, culminating an eight-year company improvement program. The new $300,000 installation is "the most modern and efficient installation in western New York," according to E. E. Truslow, secretary-treasurer of Empire. The company's program of improvement has paid off, since sales have doubled in the eight year period. Current volume of sales is $1½ million per year, and projected increased building activity in the area is expected to boost that volume.

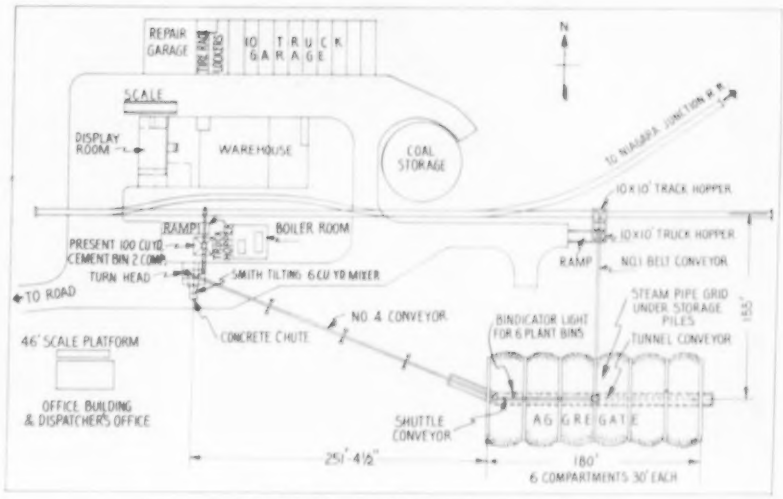
The plant was installed because a new power-development program at the company's old location—near the Niagara River—eventually would force a move, and because Empire wished to modernize its facilities to provide efficient preparation of quality and specialty concrete. The new plant location is more advantageous than the old, being in the center of the old and new city areas and serving a sales area with a 20-mile radius. Since company operating trucks use non-restricted roads and streets leading to each part

of the city, delivery time is no problem.

The new plant has a supporting structure of concrete and steel, and is entirely covered with corregated aluminum siding. The tilting mixer is enclosed to eliminate trouble from bad weather. A large masonry warehouse is adjacent to the plant. A new office building, housing dispatcher's office and scales, is of concrete block construction. Future plans include building a $100,000 garage for storage and maintenance of company mixer trucks.

Coarse aggregates used by Empire consist entirely of No. 1 and No. 2 crushed limestone. Material is obtained from Frontier Stone Products Co. quarry in Lockport, N. Y., 18 miles from the central-mix plant. A standard mix consists of 60 percent No. 2 and 40 percent No. 1 stone. Some 3A (1½-in.) is used on airport runway work. Sand used in the plant is obtained from the Pennsylvania waters of Lake Erie, and some from Lake Ontario. It is shipped by self-unloading pump boats to Empire's No. Tonawanda dock, then trucked 10 miles to the plant.

Empire officials believe that quality of concrete mix is dependent to a great extent on the properties of the aggregates used. Based on long experience with many types of aggregates, Empire has adopted crushed stone as its basic coarse aggregate because, as officials state, "we have found that, without question, this material produces the most durable concrete."



Layout of batching plant and aggregate storage facilities

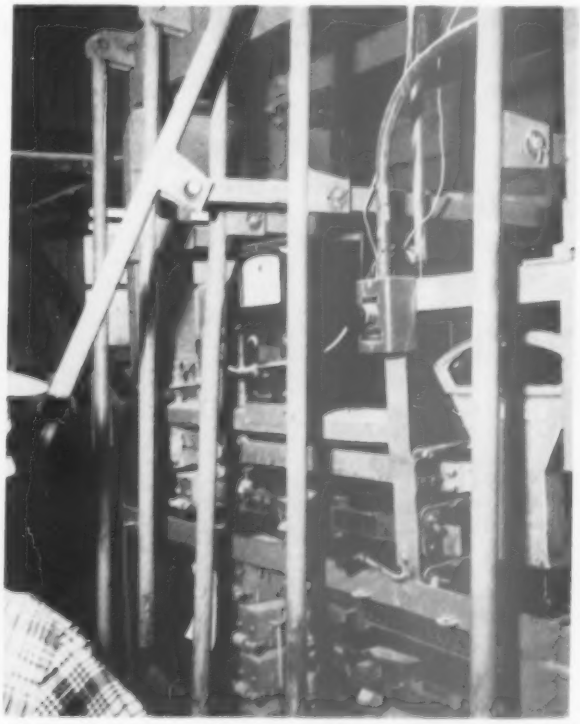
Special-purpose concrete mixes, made only by Empire in the area it serves, are supplied as a community service. Such mixes account for less than 10 percent of the company's business, but Empire provides the service because it is near many industrial plants that need special types of concrete.

Refractory concrete in the form of furnace side block, subject to high temperatures, is required by four graphite-producing plants nearby. A combination of slag aggregates (¼- to 1-in. coarse, screenings for fines) and Lumnite cement is used for refractory concrete mixes. Several chemical plants in the area use acid-resistant concrete. Limestone aggregates are not usable in such mixes, so Empire provides a pea gravel mix that gives better and longer service under the use conditions.

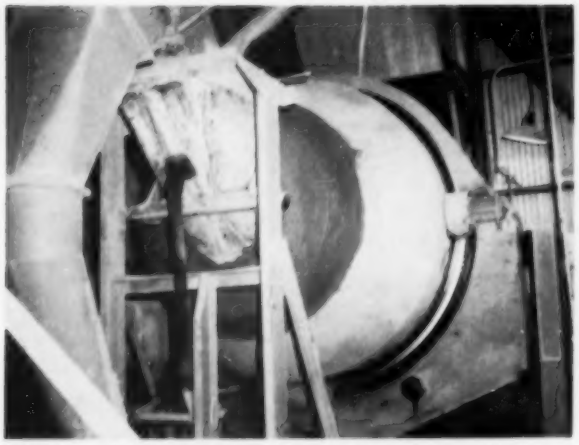
Three or four large carborundum manufacturing plants in the area request abrasion-resistant concrete for



Telautograph is used to transfer order from dispatcher office batching operator. Exact quantity and type of batch are given



Moisture meter used to determine surface moisture of aggregates as they are weighed



A 6-cu. yd. tilting mixer with air-operated tilting mechanism



Reclaiming tunnel under six-pile surface storage area

heavy-duty floor topping. Empire supplies Silicrete for that purpose.

Plant layout includes dual truck-rail handling facilities for aggregates received at the plant. Use of belt conveyors has been emphasized. Empire made the switch from cranes, used at its former plant, to conveyors. "We wanted to make the change at the new plant to reduce labor and crane maintenance costs," Mr. Truslow said. Barber-Greene conveyors and Hewitt-Robins belts are used throughout.

A six-compartment surface storage area with concrete bulkheads, served by a 24-in. belt-type shuttle conveyor 30 ft. high, is a feature of the plant layout. The flow diagram shows the details. Space is available for storing six types of aggregates, if necessary. Flexibility is provided here in conformance with the company's wish to make several types of special concrete mixes. The shuttle conveyor is reversible, so that its horizontal movement in supplying the 70- x 180-ft. storage area is unlimited. Movement and operation of the shuttle conveyor are controlled from a push-button panel at the truck-hopper receiving bin. A flop gate to control direction of material flow from No. 1 belt to the shuttle conveyor is operated from the same location, through a large grooved wheel and wire-rope arrangement.

A concrete-lined reclaiming tunnel equipped with a 24-in. belt conveyor, 170 ft. centers, is installed below the surface storage area. Twelve hand-operated self-closing draw-down gates are available (two under each 30-ft. compartment) for loading aggregates to be delivered to the plant main-feed inclined belt conveyor, also 24 in. wide. The reclaiming tunnel gives an advantage in loading aggregates for plant use in a cold climate, since material is taken from the bottom of the piles. As an additional precaution against loading frozen material, Empire has installed steam pipe grids under the whole storage area. Pipes have been cut with a hack saw every 24 in., so that live steam at low pressure escapes through the piles at all times. Steam is supplied by a coal-fired 125-hp. Ferrar & Treft boiler.

Aggregate moves to the top of the central-mix plant, 300 ft. from the reclaiming tunnel, where six storage bins are available. Each bin is equipped with Bindicators near the top and bottom. Electrical connection with a panel of red and green lights in the reclaiming tunnel shows the tunnel belt operator when each bin is full or when it is nearly empty. Each bin also is equipped with six or eight steam inlet nozzles.

Cement supply to the plant may be received in bulk shipments by truck or railroad car and discharged to separate receiving hoppers. A 30-ft. long screw conveyor moves cement from the hoppers to a bucket elevator for delivery to three cement storage bins in the plant. A two-compartment 100-cu. yd. (300-bbl.) steel bin is used for overflow, and the screw conveyor serves that bin also. One cement bin may be used for each of three types of cement used in preparing the different mixes: high-early strength, air-entraining and regular portland. Each cement bin is equipped with Bindicators that are connected with lights on the batcher's floor to show when bins are full or empty. Four red heat lamps are provided above the cement-gate and feeder bearings to reduce moisture and prevent binding.

Batches prepared at Empire vary so

(Continued on page 155)



Delivered aggregates are gravity fed from hopper onto 24-in. belt conveyor for delivery to shuttle conveyor over surface storage. Wheel at left of conveyor operates flop gate



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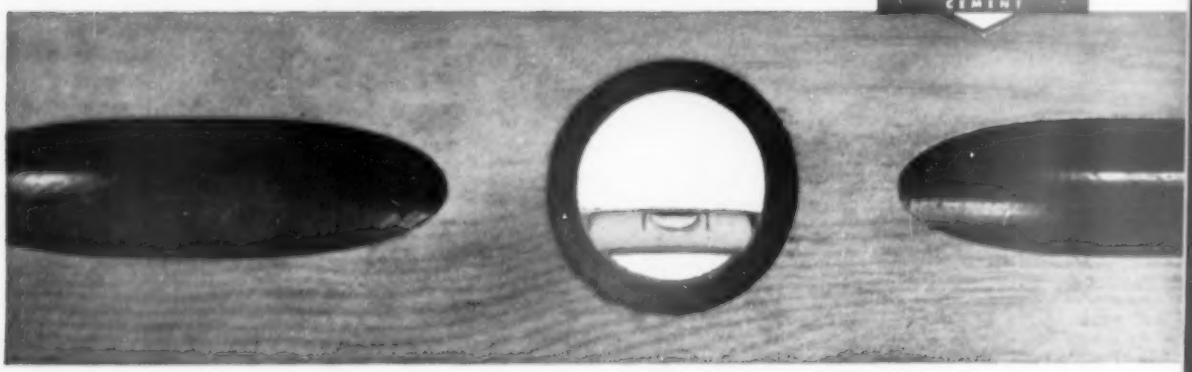
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Main feed belt conveyor to batching plant

(Continued from page 152)

much that it was inadvisable to use fully automatic controls. Aggregates are fed through air-operated bin gates into the weigh hopper. The quantity of each is determined from prepared charts and set on a Butler calibrated scale beam (three available) according to the quantity and type of mix wanted. A separate scale is used for cement, and cement feed is controlled electronically.

Water also is controlled electronically for each batch. Water requirements for varying quantities and types of batches are based on 5 percent moisture, and are charted for the operator's convenience. Quantity of water for each batch is set on a scale beam, which is calibrated in gallons. A pneumatic valve controls water flow. A. C. & S. surface moisture meter indicates moisture of aggregates as they are weighed. If moisture registers above 5 percent, proper water quantity for the batch is obtained from a Master Builders chart. Daily manual moisture tests so far show moisture readings from the meter to be correct within one-half of one percent.

Batches are mixed at the Empire plant in a 6-cu. yd. Smith tilting mixer, which has given excellent service to date. A chute is available to by-pass the mixer if dry batches are required. The central-mix plant was chosen by Empire because more concrete can be carried per truckload. Trucks do not have to mix, just agitate. Capacity of the plant is 100 cu. yd. per hr., since an average of 20 5-cu. yd. loads can be mixed per hour. Thus, average mixing time per load is 3 min. The company operates a fleet of 18 6-cu. yd. mixer trucks, mostly of T. L. Smith manufacture.



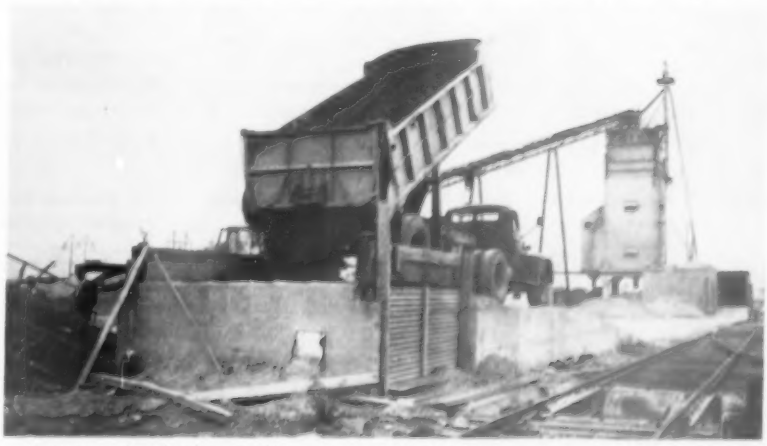
Surface storage with six piles holding six aggregate sizes

A Telautograph Telescriber is used for accuracy and speed in transmitting orders from the dispatcher's office to the batcher operator. A bell rings in the batcher's office when an order is put through on the telescriber. A 50-ton Howe scale with a 45 ft. platform is used to weigh aggregate received at the plant in trucks. The scale also is used by other local truckers, since it is large enough to handle the biggest trucks. It is supplied with a Weightograph, or visual weight recorder.

Main company office and warehouse are located in Niagara Falls, a few miles from the plant. Donald L. Coe, president; H. B. Devitt, vice-president; and E. E. Truslow, secretary-treasurer, have headquarters at that office. At the plant, Richard Mosher is superintendent; Joseph Caprio is dispatcher; and Charles Clint is batcher operator. Thomas Trapasso is steward or head driver for the company.



Two mixer trucks at batch loading station; wet mix on right, dry mix on left



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NEW MACHINERY



Concrete Drill

MALCO DRILLING MACHINES, INC., Washington, D. C., is producing a concrete drill that uses diamond core bits. The unit incorporates a swivel head that allows 1-in. to 14-in. holes to be drilled at any angle through reinforced concrete and other hard materials.

Enter 223 on Reader Card



Transmitter-Receiver

MOTOROLA, INC., 4501 W. Augusta Blvd., Chicago 51, Ill., has announced the addition of the "Compa-Station" transmitter-receiver to its standard line of fixed FM two-way radio equipment operating in the 25-54 or 144 to 174 megacycle band. The unit includes a 60-watt transmitter and a Sensicon "G" receiver. It features a removable control panel with a built-in speaker which can be placed in any one of three positions on the cabinet. Louvered vents are placed at alternate control panel positions. The control panel can also be removed and placed in any desired location for extended local control operation. The transmitter-receiver may be adapted for two-wire or four-wire remote control operation from a remote control console. The unit, weighing about 100 lb., operates on a standard 117 volt, 60 cycle source.

Enter 224 on Reader Card



Ready-Mix Concrete Trucks

FOUR WHEEL DRIVE AUTO CO., Clintonville, Wis., has introduced two ready-mix concrete trucks, featuring six-wheel drive and designed especially to deliver concrete to off-highway locations where terrain is rugged or soft. They are Model C6-407 (illustrated, with a 5½-cu. yd. mixer), a conventional-cab unit with 10,000 lb. capacity front axle capable of carrying up to 7-cu. yd. of concrete, and Model CS6-457, which has one-man cab design and 15,500-lb. capacity front axle. The latter can transport 8 cu. yd. of concrete.

The FWD six-wheel-drive distributes torque to three driving axles by a patented, power-proportioning center differential design, with a separate propellor shaft to each axle. Both models have large six-wheel full air brakes, 15-in. single plate clutch with 256 sq. in. of lining area, and heavy-duty design in the drive line. Series 5C65 transmission, transfer and axles. Standard engine on both trucks is an RD-501, a 6 cylinder, 212-hp series. Model C6-407 has chassis weight of 13,400 lb. Usual wheelbase range is 162 through 192 in. Model CS6-457, designed with the engine alongside the cab, has a chassis weight of 13,600 lb. Usual wheelbase for this model is 168 through 192 in.

Enter 225 on Reader Card

Division Plates

BERGEN MACHINE AND TOOL CO., Nutley, N. J., is now producing division plates and other mold parts of special alloy steel known as "Super-Plate." It is a Bergen development for use in Tri-Matic and similar block machines. Super-Plate is carburized and hardened to a depth of approximately 3/32 in. (.093-in.), which is almost double the distance to which a plate should be allowed to wear before discarding.

Enter 226 on Reader Card



High Speed Block Blade

CONSOLIDATED DIAMOND TOOL CORP., Yonkers, N. Y., has developed a line of Carbide Bonded, diamond blades designed for high-speed, wet cutting of abrasive block. Cutting tests were conducted by the company on such abrasive block as Haydite, Waylite, cinder block, concrete block and cinder block with a simulated tile or marble facing, and were reported to provide longer life and faster cutting speeds.

Enter 227 on Reader Card



Low-Headroom Lift Trucks

THE ELWELL-PARKER ELECTRIC CO., Cleveland, Ohio, has introduced the "Safe-Hite" series of fork trucks, with capacities of 2000, 3000 and 4000 lb., specially designed for use where low headroom is a problem. The principal feature is the reduction in height of the battery compartment, so that the

(Continued on page 159)



Vibrapacs make money for you. But you can make MORE money if you use Genuine Besser Core Assemblies. Besser Cores are made of the finest alloy steel that money can buy. This steel is stress-relieved . . . hardened through modern heat-treat methods . . . parkerized . . . and then 100% inspected before shipment. Special steel used for core bars maintains core alignment. Properly rounded corners on the core bars help to guide the stripper shoes into the mold. Block Makers know from experience that Genuine Besser Core Assemblies wear longer.

Tip to Block Makers — A concrete block made with worn cores and division plates is about 2 lbs. overweight. If you multiply this by the number of block produced each day, the figures become staggering. So play safe. Use Genuine Besser Parts. The savings in dollars on a single day's production will pay for the parts.

BESSER Company

BOX 135, ALPENA, MICHIGAN, U. S. A.

Complete Equipment for Concrete Block Plants

BESSER PARTS STORES

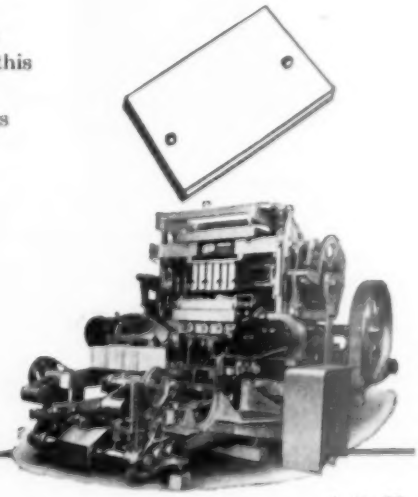
ATLANTA
901 Sycamore
Decatur, Georgia
Phone:
DEarborn 5781 & 5782

BUFFALO
116 Michigan Avenue
Buffalo, New York
Phone:
MOhawk 3990 & 6019

LOS ANGELES
15026 Oxnard Street
Van Nuys, California
Phone: STate 5-5457

NEWARK
140 Delancy Street
Newark, New Jersey
Phone: Mitchell 2-1434

BESSER Genuine PARTS



Enter 1379 on Reader Card

A 102-1PC

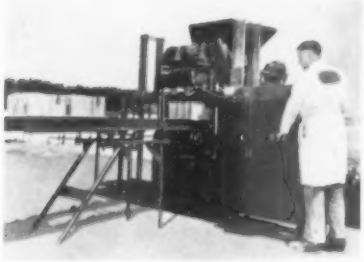
operator, whose seat is on this compartment, sits 18 in. lower than on conventional models, without sacrificing visibility. A caster trail axle design is featured to provide truck maneuverability without sacrifice of physical strength. All models are equipped with an hydraulic lift.

Enter 228 on Reader Card

Low Hydrogen Electrode

AIR REDUCTION CO., INC., New York, N. Y., has developed a new electrode, designated as "Airco Easyarc 328," for all position welding of mild and low alloy steels. It is of the low hydrogen type with iron powder added to the coating for high welding speeds. Airco Easyarc 328 is recommended for welding hardenable steels, cold rolled steels, low alloy or mild steel when stress relieving is required, and weldments to be vitreous enameled after welding.

Enter 229 on Reader Card



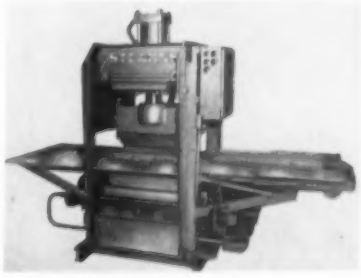


Air-Cavity Block

PRESTO BLOCK MACHINE CORP., New York, N. Y., has developed an "air-cavity" concrete building unit and the automatic equipment (upper photo) for its manufacture. Its product, "Presto Block," combines sound, temperature, and moisture insulation qualities of twin-wall construction with an economy deriving from simplicity of erection. The top, bottom and end surfaces are keyed to lock upon erection, thus permitting a wall to be laid so that at no point does the inner and outer wall have a through masonry bond (see lower photo). The "twin-wall" design also simplifies the installation of electrical wiring and plumbing. No furring is needed, due to the through air space created by the double wall construction. They are made at the same speeds and with the same aggregates as the conventional concrete block.

This is a newcomer to the "do-it-yourself" home construction field, since Presto Block can be handled by semi-skilled workmen. They are laid with no mortar between joints, eliminating mortar tubs and heavy construction scaffolding. After the wall is erected, the keyed joints are pointed. Columbia Machine of Vancouver, Wash. has contracted to produce Presto Block machinery and equipment.

Enter 230 on Reader Card



Block Splitter

STEARNS MANUFACTURING CO., INC., Adrian, Mich., is manufacturing a new block splitter that uses 40 "floating action" knives to break concrete block. This is said to allow a better contact on rough surfaces and produce fewer culls.

The machine is hydraulically operated with solenoid-actuated valves to initiate the five separate operations. It will operate at from 6 to 12 cycles per minute and will accommodate block up to 8-in. in height and 24-in. in length.

Enter 231 on Reader Card

Gas-Oil Burners

IRON FIREMAN MANUFACTURING CO., Cleveland, Ohio, has brought out a new line of combination gas-oil burners for industrial applications, each model having an integral air register. The oil burner is the Iron Fireman Rotary cup burner, designed to fire with No. 6 or lighter oil. Oil burner ratings run from 9 to 125 gallons per hour. The ring-type gas burner has multiple tubular stainless steel jets threaded into the heat-resistant cast iron manifold ring. It may be used with either natural or manufactured gas. Capacities range from 1,650,000 B.t.u. input per hour to 18,750,000 B.t.u. input. Change-over from one fuel to another is a matter of operating a selector switch, or of reliance on automatic controls. No mechanical changes are necessary. There are electronic combustion controls, a programming control, and an automatic magnetic starter switch. A factory-wired control panel may be secured as accessory equipment.

Enter 232 on Reader Card



Colors for Mortar Mixes

FRANK D. DAVIS CO., Los Angeles, Calif., announces a service to the makers of colored concrete masonry units; the availability of packaged cement colors in the same shades as those used in the manufacture of block. The colors are packed in 1- and 5-lb. bags, enabling the masonry contractor to make uniformly colored mortar mixes by adding one or two 1-lb. bags per mix, depending upon the intensity of the shade desired. The colors are merchandised under the label "True Tone Cement Colors."

Enter 233 on Reader Card

Block Conveyor Belt

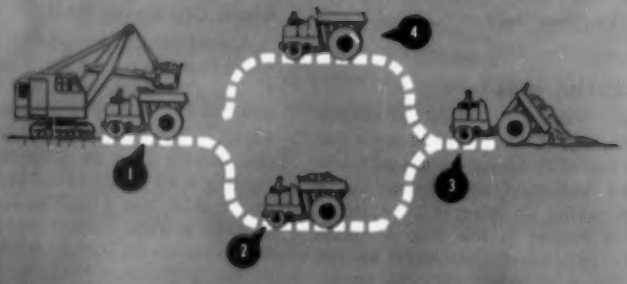
AMERICAN CONVEYOR CO., Chicago, Ill., is manufacturing the "Con-Vay-It-F" for conveying block on construction sites. Models available are the 12-13, 12-20, 12-25, and 12-30. Special lengths may be provided. Powered by a 60-cycle, 110/220-volt electric motor, the Con-Vay-It-F has a friction surface, rubber covered belt, which moves on surface flush with top of boom channels. Standard speed is 70-f.p.m. It is of all steel construction, metallic arc welded, with steel wheels as a standard item. (Pneumatic tires are also available). Moving parts are protected as a safety feature.

Enter 234 on Reader Card



On this Dumptor shuttle operation, it's an up-hill haul all the way from floor of pit to top of ramp. The other half of this big production team is a Koehring 1½-yard 605 shovel.

HOW TO *haul without turning*



1 Dumptor gets load, body forward, ready to travel.

2 Pulls away from shovel, body forward, ready to dump.

3 Dumps in one second, shuttles back for next load.

4 Returns to shovel in high gear, all without turning.

Shuttling between loading unit and dump area, Koehring 6-yard Dumptor travels round-trip *without turning*. It operates with equal ease in *both directions* along narrow haul roads, in tunnels, on overhead trestles — is especially practical for stockpiling, feeding crushers, loading cars. Dumptor gets this unique, no-turn advantage through a constant-mesh transmission that gives the same 3-speed travel in either direction.

Increases hourly output over 10%

By eliminating at least two slow turns on every trip, Dumptor cuts 30 seconds off normal cycle-time. This adds up to a substantial increase in yards or tons hauled per hour. For example — take a typical 1,000-foot haul where you are getting an average of 13.6 trips an hour with 2-turn operation. Even if Koehring Dumptor took the same time to load, haul, dump and return,



its *no-turn* advantage would give you 15.4 trips. That adds up to an increase of 1.8 trips an hour on the same 1,000-foot haul.

Dumps in one second

Gravity-dumping cuts another 15 to 25 seconds off cycle-time. There's no waiting for slow-acting body-hoists. Operator trips the release lever, and *gravity* dumps the 6-yard load in *one second*. Costs stay low, because with gravity-dump, there are no expensive hoist replacement parts, or hoist maintenance.

Check what these Dumptor® advantages can mean in increased production and lower costs on your work. Call your Koehring distributor now.

KOEHRING COMPANY

MILWAUKEE 16 WISCONSIN

Subsidiaries:
JOHNSON
PARSONS
KWIK-MIX



"Repeater" automatically re-batches any mix selection

At the turn of a dial and push of a button, this Johnson automatic Batch Controller selects any one of 120 different size and type batches of aggregates and cement. It weighs out any combination of materials you set up on the central dial-scale control panel . . . and automatically repeats any batch selections for a pre-determined number of times.

The electric-control, 120-mix-selector panel provides for concrete of various strengths in any combination of materials, in ½ to 2 cubic yard batches. For each size batch there are individual selections for 3 to 6-inch slumps. Dial system makes it easy to change from one mix selection to another. To get any size or type of batch, operator merely turns the selector dial, sets the "repeater", pushes the "start" button . . . and the plant weighs out fast, with pinpoint accuracy. During the batching cycle, a lock prevents accidental change of the mix selector.

Nine material weigh-dials on the control panel have individual pen-recorders. Exact weight of each batch is automatically graph-recorded. Johnson transit-mix plant shown here has: six 5000-lb. aggregate batchers (two with automatic moisture-compensators) . . . a 3000 lb. cement batcher with dual fill valves for selecting 2 types of cement . . . a 2000-lb. water weigh-batcher, and a 5-lb. (80-oz.) air entraining admix batcher. All are fully automatic.



Whenever you plan a new plant . . . or want to modernize an existing set-up, look into the increased efficiency you can get with Johnson equipment. You'll find your Johnson distributor is at your service . . . ready to help at any time.

C. S. JOHNSON CO. CHAMPAIGN ILLINOIS
Koehring Subsidiary

Enter 1415 on Reader Card



Curing rooms in the foreground with batching tower and main plant building to the rear

From Block to CONCRETE PIPE

• Efficient material handling set-up and convenient curing facilities in 300-ton per day capacity pipe plant of J. E. Evans Concrete Products, Inc., Shelbyville, Ind.

By HUBERT C. PERSONS

CONCRETE PIPE is being produced in sizes from 8 in. to 84 in. diameter by J. E. Evans Concrete Products, Inc., Shelbyville, Ind. This company has been making concrete block since 1920. The Pipe Division is in an entirely new plant, with a daily capacity of 300 tons.

The main plant building has an operating floor 50- x 130-ft. with 28-ft. headroom. There are four curing rooms, three of which are 30- x 100-ft. and one 60- x 90-ft.

The roof over the curing rooms and the machine shop is of lightweight concrete joist and filler block design utilizing the "Joistile" roof system, developed by the Masolite division, General Dredging Co., Inc., Ft. Wayne, Ind. It is covered with 2-in. of cast-in-place concrete over wire mesh. All plant buildings, except the batching tower, are of concrete masonry units made in the Evans company's block plant.

Bulk cement, delivered by truck, is unloaded by gravity into a receiving hopper from which it is carried by an 85-ft. bucket elevator to the batching tower. The main cement bin has a capacity of 650 bbl. There is also a feeder bin for cement holding 70 bbl.

Aggregate is trucked from the sand and gravel plant of E. T. Burnside, Inc., which adjoins the Evans plant, and from the receiving hopper is conveyed by bucket elevator to a four-compartment aggregate bin at an elevation of 108-ft. Each aggregate bin holds 40-cu. yd.

Two pipe machines are being operated. Tongue and groove or bell and spigot pipe are made on a McCracken machine in diameters from 8-in. to 36-in. Either 4- or 6-ft. lengths are made.

A Quinn tamper machine is used to make sizes from 24-in. through 84-in. in 6-ft. lengths.

Each pipe machine is served by a 50-cu. ft. Besser mixer. An automatic C. S. Johnson weigh batcher serves both pipe machines. Water in the concrete mixture is regulated by a P & S Moisture Meter.

Reinforcing cages are shaped on a Lown bending machine. The plant also has installed a Tuerck-McKenzie machine to cast Y and T units. Another machine by the same company casts 45 and 90 deg. bends.

All but the largest size pipe are

(Continued on page 174)

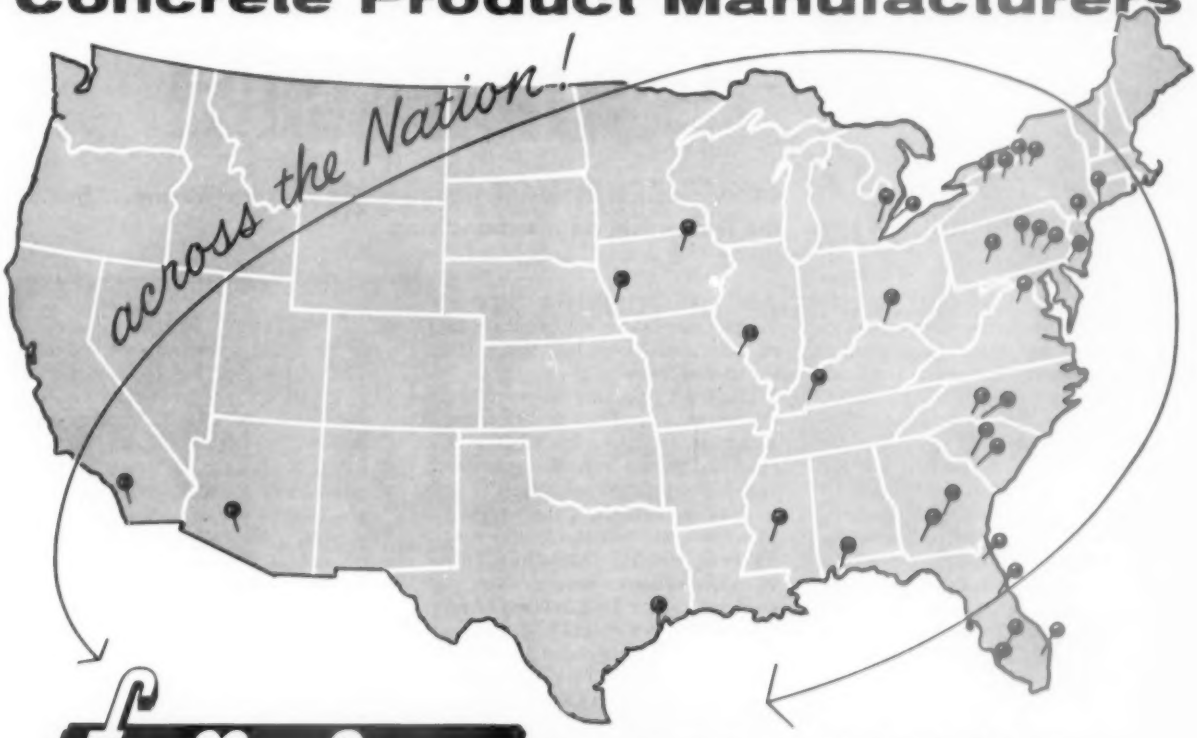


Paul K. Welsh, general manager, during construction of pipe plant addition

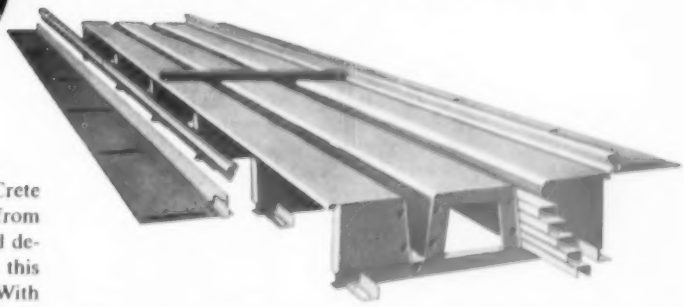


Showing large concrete pipe stockpile in a wide range of sizes

The choice of Prestressed Concrete Product Manufacturers



FORM-CRETE® STEEL FORMS



The immediate acceptance and purchase of Form-Crete Steel Forms by prestressed concrete manufacturers from coast to coast provides ample assurance of the sound design, practical rugged construction and economy of this new innovation in the prestressed concrete field. With the addition of a line of I-beam forms engineered for casting all standard specified sizes of prestressed concrete I-beams we offer the most complete line of coordinated interchangeable forms and accessories obtainable anywhere. A new revised catalog is available soon—write for your copy today.



FORM-CRETE DOUBLE-T ALL-STEEL CASTING FORMS—*By utilizing a variety of gout forms and stem heights an ingenious manufacturer can easily surpass the 37 individual prestressed concrete castings that we conservatively estimate may be produced from this one all-steel form assembly.*

SEND FOR **FORM-CRETE BULLETIN 100-A**

FOOD MACHINERY
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FLORIDA DIVISION
LAKELAND, FLORIDA

PF-5

FORM-CRETE STEEL FORMS FOR CASTING REINFORCED OR PRESTRESSED CONCRETE


DOUBLE "T" SLABS


SINGLE "T" JOISTS


HOLLOW AND SOLID LINTELS


SQUARE AND OCTAGONAL PILING


BRIDGE BEAMS


PAN TYPE BRIDGE DECKS

Enter 1413 on Reader Card

Merchandising
Ready-Mixed Concrete

By JAS. A. NICHOLSON*

44: A producer views the ready-mixed concrete business. This is the first article on merchandising

READY-MIXED CONCRETE PRODUCERS assemble and mix sand, coarse aggregate, cement, and water into an important material of construction. The contractor, our principal customer, can and sometimes does mix his concrete. Until the advent of the truck mixer some 30 years ago, all contractors made their own concrete. Unless the ready-mixed concrete industry supplies the contractor with a better, more economical product, he will again make his own. As Bob Collins, former president of the National Ready Mixed Concrete Association, in his very fine talks on Merchandising Quality Ready Mixed Concrete, has many times pointed out—"Our best customers are our severest customers". To keep the contractor's business, we've got to sell him on quality and convenience, as well as convince him it would cost him at least as much money to produce a similar product.

To produce a higher quality, more uniform concrete that our industry must do to justify its existence, producers must use the best materials economically available; employ competent, experienced personnel to weigh out, mix, and deliver concrete; periodically check the quality of concrete; provide concrete deliveries on a time schedule that will meet job requirements; and top management itself must have the desire and determination to process and deliver a quality product.

In the setting up of an effective program for merchandising ready-mixed concrete, producers must realize that they somehow have got to reach a goodly number of people if yardage volume and profits are to attain anticipated goals. In urban markets, many contractors must be brought to the point where they want to buy concrete. In competitive rural markets, an even greater merchandising effort must be made because a larger amount of sales will go directly to consumers. To get comparable volume there must be more small sales to a much larger list of customers.

Generally speaking in merchandising efforts, a producer has got to reach architects, engineers, specification writers, key public officials, purchasing agents, top management men of contracting companies, construction superintendents, job foremen, cement finishers, concrete contractors, officers of organizations contemplating construction of any kind, owners of properties, new home building prospects, key men in large industrial firms, paving contractors, farmers planning farm improvements, principal suppliers, and the general public.

An effective job of merchandising ready-mixed concrete requires more than a merchandise-minded producer. To reach the people that he must reach, a producer must have the active cooperation of his order taker, dispatcher, the bookkeepers who prepare invoices and statements, credit manager, field representatives, drivers, plant men and mechanics. At each and every opportunity, these people must sell the company and its products.

In merchandising concrete, the average producer uses the office and home telephone, the driver on the job, personal visits to key men in the contracting field, good looking mixer trucks on the streets, plant efficiency, a line of allied products (e.g. concrete block manufacturing), quality concrete, excellent service, fair price, and a good name to reach a sufficient number of customers whose trade will enable him to enjoy a profitable operation.

At practically no increase in operating costs, an alert "on his toes" producer can use the following tools in a more effective effort to properly merchandise his concrete:—friendly interest of job superintendents and other customer employees; good will of cement finishers; sales slanted invoices, statements, and credit letters; promotion of a safety program; establishment of good labor relations with employes; organized assistance and participation of all employees in the merchandising efforts; encouraging customers to tell their friends of good service and quality concrete; attendance at builders' and architects' meetings (also at other meetings where good can be accomplished); showing educational films of the ready-mixed concrete industry to groups; cooperation of friends; assistance of suppliers; participation in civic affairs; membership in American Concrete Institute; activities in his state association and in the National Ready Mixed Concrete Association; use of merchandising ideas suggested by trade publications; careful study of local newspapers for construction stories, building reports service, prompt following up of all new construction leads, checking obituary columns, sending flowers, and putting in an appearance at mortuaries; visits to the sick; sending congratulatory messages (e.g. on hearing of civic achievement, job promotion, or graduation and marriage of children); assistance of service engineers of P.C.A., cement companies, and aggregate producers; prompt and fair handling of complaints; development of an efficient preventive maintenance program and use of reliable delivery equipment.

Through improvements in operating procedures, an efficiency minded producer can expect to sizably add to business volume without making any direct expenditures in the fields of promotion or advertising. A list of operating improvements would include such items as use of two-way radios in mixer trucks; employment of salesmen and field representatives; purchase of larger, more reliable, and better appearing mixer trucks; addition of new weighing and mixing controls at plants; installation of area plants to cut down lengths of hauls and shorten delivery times; providing up to the minute weather information

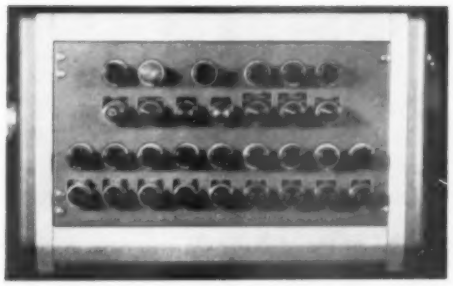
(Continued on page 169)

*Pres., Nicholson Concrete Co., Toledo, Ohio

Unitized for ease of maintenance, the Helco-matic requires no specialized attention.



Helco-matic* Batchmaster

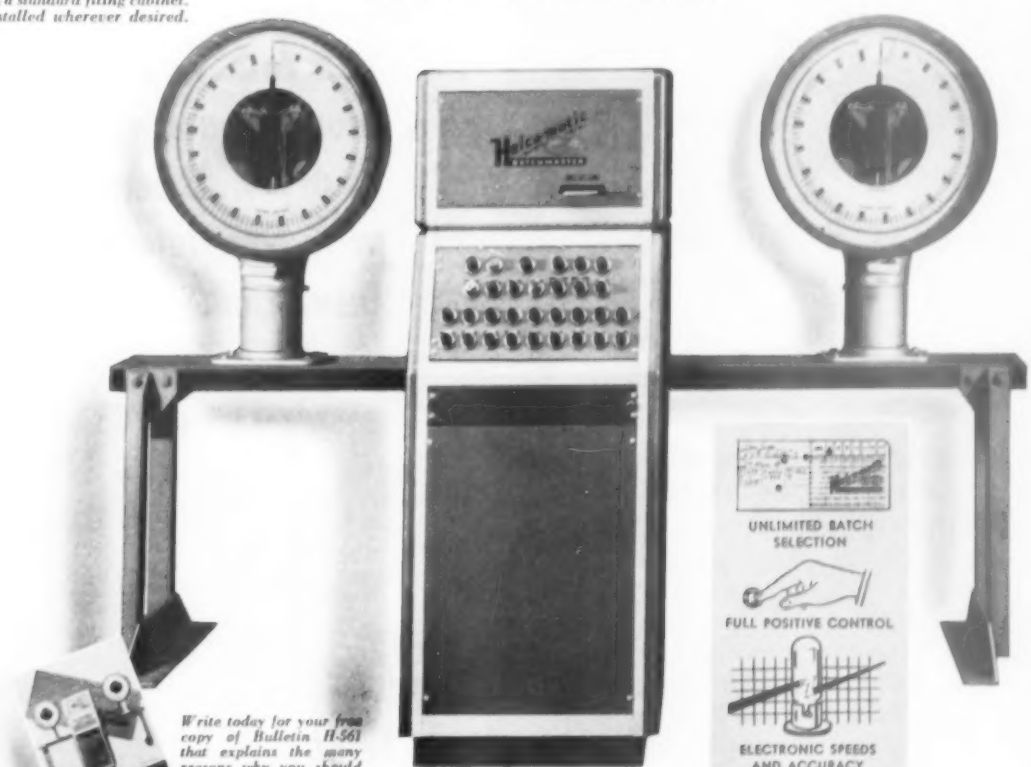


Compact, the entire unit is no larger than a standard filing cabinet. Can be installed wherever desired.

THE ABSOLUTE ULTIMATE IN AUTOMATIC BATCHING

Here's the most revolutionary development in automatic batching in more than a decade. The **Helco-matic Batchmaster** unites, for the first time, the speed and accuracy of electronics with commercially acceptable weighing units to give ready mix concrete producers the finest batching system in the industry today.

Incorporating the IBM punch card system, the Helco-matic enables users to batch any amount of any number of materials in any sequence automatically and have a complete and permanent record of the transaction. There IBM cards can be used for establishing complete inventory billing and costing systems for all raw materials or finished products handled in your daily business. Aside from unlimited batch selection and its remarkable accounting features, the Helco-matic provides ready mix producers with a system that automatically compensates for moisture, by weight, plus a system that meets all known state and federal batching specifications. Before you buy any batching equipment, be sure you have all the details on this amazing new Helco-matic unit. Write for your copy of Bulletin H-561 today.



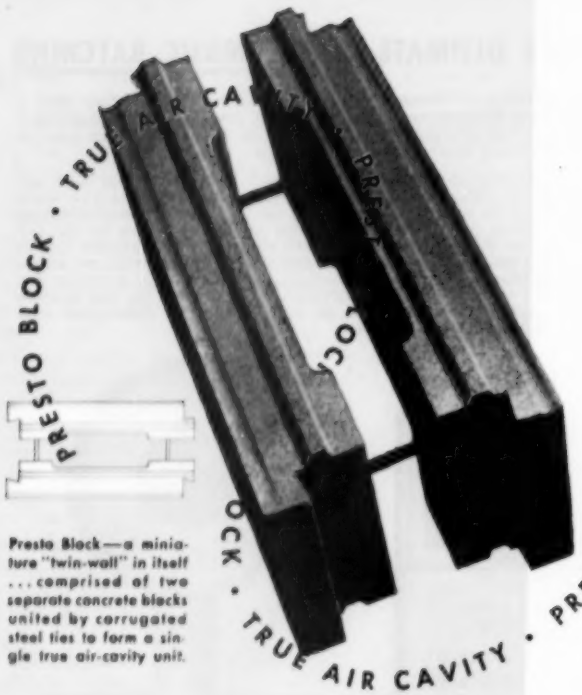
Write today for your free copy of Bulletin H-561 that explains the many reasons why you should have Helco-matic working for you.

THE HELTZEL STEEL FORM & IRON CO. WARREN, O.

89500 Thomas Road

Enter 1412 on Reader Card

PRESTO BLOCK INTRODUCES



Presto Block—a miniature "twin-wall" in itself ... comprised of two separate concrete blocks united by corrugated steel ties to form a single true air-cavity unit.

A TRUE AIR CAVITY BLOCK...

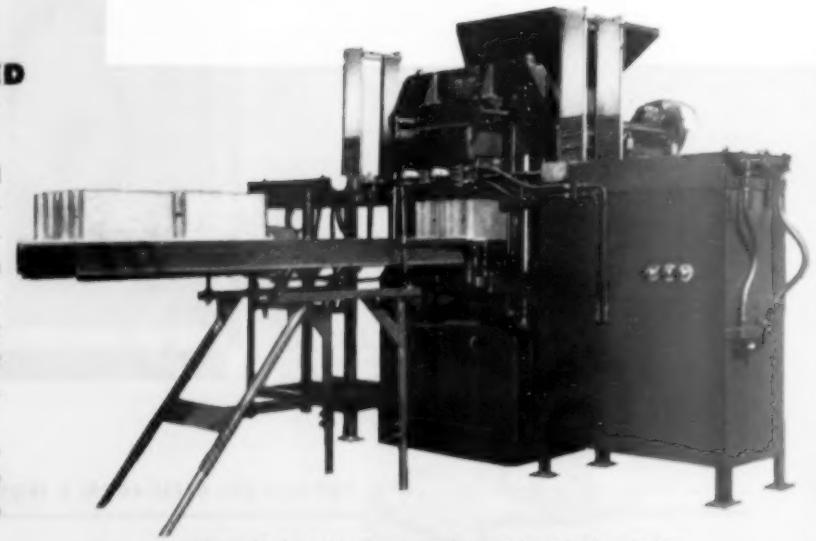
that combines the economy and erection speed of dry-wall construction with complete twin-wall insulation.

AUTOMATICALLY PRODUCED at 4 to 6 cycles per minute

(depending upon aggregate used)

Presto Blocks are automatically produced on the same performance-tested hydraulically-operated, electronically-controlled machines used by hundreds of block plants in the manufacture of standard masonry units. Presto Blocks are produced at the same speeds, at the same cost, and with the same aggregate as conventional concrete block.

The most advanced features of hydraulic-electronic operation are built into precision-manufactured Presto Block machinery and equipment.



Presto Block Machines are manufactured by Columbia Machine under U. S. and world-wide pats. and pats. pending.

PRESTO BLOCK . . . A DYNAMIC NEW

THE FIRST REVOLUTIONARY ADVANCE IN MASONRY IN 20 YEARS . . .



PRESTO BLOCK ENDS THE SEARCH FOR A SINGLE-UNIT TRUE AIR-CAVITY CONCRETE MASONRY BLOCK

Today, you can benefit by these long-wanted consumer and manufacturing advantages that give cost-conscious builders, architects and homeowners a more versatile building unit at lower in-the-wall cost.

COMPLETE AIR-CAVITY INSULATION

Only Presto Block builds a true air-cavity wall for complete sound, temperature and moisture insulation. Each Presto Block is actually a miniature "twin-wall" in itself – comprised of two separate concrete blocks united by corrugated steel ties.

FAST, EASY ERECTION

Presto Blocks are keyed at end, top and bottom to lock upon erection. No mortar is required until several courses have been laid; then the joints may be speedily pointed by hand or with a mortar gun.

VERSATILE

Presto Block lends itself to every type of home and commercial construction. Simplicity of erection makes Presto Block the ideal building unit for "do-it-yourself" projects.

ECONOMICAL

For all its built-in "extras" Presto Block costs no more to manufacture than conventional concrete masonry. Produced with the same aggregate – and at the same production speeds – as standard concrete block.

FRANCHISES

. . . for complete information in regard to franchise arrangements . . .

Write, wire or phone . . .

PRESTO BRICK MACHINE CORPORATION

Empire State Building, New York, N. Y.
Phone CHickering 4-7288



BUILDING MEDIUM . . . PRESTO BLOCK



Satisfied customer Art Martinson (right), president of Denver's Kitimat Corporation, and Phil Smith, Mack salesman. There's real friendship between these two—and no wonder! Mack diesels are giving Kitimat . . .

100% more fuel mileage

The Martinson Construction Company of Denver, Colorado, leases a fleet of trucks from the Kitimat Corporation. Originally, the trucks were gasoline-powered units averaging 3½ to 4 miles per gallon—real "profit killers." Today, Kitimat operates Mack diesels exclusively and averages 8 miles per gallon—for a saving in fuel costs of more than 100%.

As Kitimat president Art Martinson says, "In 1952 we bought our first Mack diesel and got a real lesson in truck economy and performance. Today, we are 100% Mack—12 mixers, 6 dumpers, and 2 tractors. The fuel savings alone more than justify the higher initial cost of the Macks. Just as important, our Macks give us dependable service, bonus capacities, and lower maintenance costs with a really gratifying minimum of down time."

Why not cut hauling costs and boost your profits with Macks—trucks that are unmatched for operating economy, stamina, and low maintenance? Like other operators, you'll find that you can't afford *not* to operate Macks. For complete information, contact your local Mack Branch or Distributor. Mack Trucks, Inc., Plainfield, New Jersey. In Canada: Mack Trucks of Canada, Ltd.

• • •

MACK
first name for
TRUCKS

Enter 1397 on Reader Card

Merchandising Ready Mix

(Continued from page 164)

to contractor customers; and the services of a testing laboratory to improve the quality of concrete.

In merchandising efforts, a promotion minded producer uses these and other advertising tools: — advertisements in building sections of local newspapers; adequate coverage in yellow pages of telephone books; special occasion advertising (e.g. opening of a new subdivision or announcing the completion of a new plant); attractive signs on company trucks; signs on construction jobs; gimmicks, giveways, reasonably priced gifts at Christmas time (or on other occasions) to important customers; educational and fellowship parties for architects, contractors, and finishers; use of direct mail literature (e.g. envelop stuffers and advertising blotters); sponsorship of home builders parties; program advertising and advertising on radio and television.

In planning a merchandising program, a producer should give full consideration to the importance of building good will for the company. Good will is the heart of successful merchandising. A producer should have a real pride in his business, employes, service, and product quality. A producer should have a great appreciation of customer importance to his business. He should see to it that employees always show proper respect to his customers. In my book, a customer should be respected at all times regardless of how unreasonable he can be on occasion. He should get the best possible service. Every effort should be made to avoid plant breakdowns and delivery holdups. Our drivers should give full cooperation to his job employees. He should get fast and accurate billing. At every opportunity, the customer should be made to feel that his business is appreciated.

A producer should operate his plant in such a manner that it is not a nuisance to the neighborhood. He should strive to have fine appearing, properly operated mixer trucks. He should insist upon good housekeeping at his plant. He should go all out to avoid bad publicity that might result from such incidents as wild driver operation of trucks, dropping concrete on streets or trailing mud behind traveling trucks. Through the production of quality concrete, efficient operations and proper relations with customers and the public, a producer can do much to build good will for his company and develop an increasing demand for his product.

In a competitive market, ready-mixed concrete producers basically have three things to sell:—quality, service, and price. In a stable market, quality and service are stressed in merchandising concrete. In a bad market, the low price quotation is the main tool used to build up volume. It should be entirely apparent to every producer that efforts made to increase yardage volume are practically valueless if increased profits fail to materialize. Profit returns from many parts of the country indicate that too many operators have been using price cutting practices in unwise attempts to get added volume. In such markets, quality is bound to suffer as producers go in for truck overloading, reducing cement content, using cheaper aggregates, speeding up operations at the expense of quality, and other harmful practices in an attempt to bring costs in line with reduced selling prices.

Producers who employ such harmful practices in order to put out concrete that can be sold cheaper give a black eye, not only to themselves, but to our whole industry. Such practices have been sufficiently widespread that a number of engineers in some areas hesitate to specify ready mixed concrete for use on their work. Unfortunately, it generally takes only one bad price cutter in a marketing area to start a chain of events that winds up with everybody being the losers.

Just because one ready-mixed concrete supplier is using price-cutting tactics to increase business volume, it doesn't necessarily mean that a whole market has to go to pot. I know of an area situation where, in spite of a cement shortage, one ready mix producer had made a regular practice of selling concrete $1.00 per cu. yd. below competitors' prices. One of the other producers, tired of losing important customers to this competitor, decided to do something about it. He arranged a meeting with the erring producer and frankly discussed the whole situation. He showed a sufficient number of invoices to the other producer to quickly convince him that he was giving up a good many thousands of profit dollars. Shortly after this meeting, the producer who had been using a lower price as his principal sales weapon, rearranged his own pricing structure sharply upward.

In merchandising their concrete, producers must keep in mind that contractors are always trying to buy value (both in quality and service) at the lowest possible cost. Our job is to sell quality and service and get a fair price for our concrete. Producers who employ salesmen must continually urge these men to stress quality and service in their sales efforts. Salesmen should be given a good idea of the cost of doing business and be made to realize the importance of a reasonable profit. No salesman should be paid a bonus or commission on business that can't possibly show a fair return to the producer.

Ready-mixed concrete operators should make regular meetings with sales personnel an integrated part of their merchandising program. Management can learn much from such meetings with sales representatives; not everything that is heard should be believed. In these meetings, management should attempt to find out the value that competition is giving in quality and service in return for the selling price it is charging for its concrete. Little credence should be placed on unproved reports of price "finagling". On low price accusations, salesmen should be encouraged to get the proof. The chances are that most competitors are just as anxious to secure a reasonable profit on every job that is sold.

In many large jobs that members of our industry have handled, the contractor has sold the producer or one of his salesmen an order at too thin a profit margin. In sales calls on contractors, a producer and his representatives should realize the most important value that is going to be given consideration is the integrity of the ready mixed concrete company. Any real contractor is going to be certain about the comparative values offered by a competitor before he goes for the lower price. When the importance of value is kept in mind, the sales representative has a better chance of doing a good selling job. He will sell the contractor, rather than be sold a piece of profitless goods by the contractor.

There are some producers who zealously maintain prices, yet try in every other imaginable way to give a contractor a bargain. They are always willing to make concessions. They agree to allow extra unloading time without compensation and to make no extra charge for partial loads. They take off the heating charge for winter concrete. Some producers even agree, where strength is not a serious factor, to give an overyield on every cubic yard of concrete that they produce. To offer such enticements is as nefarious a practice as the worst price cutting tactics.

To enjoy a good market in which reasonable profits are in line with business volume, there must be in-

DUR-O-WAL

Backbone of Steel for EVERY Masonry Wall



RUNNING BOND

DEMAND

Designed specifically for masonry crack control, Dur-O-wal is specified by architects and builders everywhere. Supply this demand.



CAVITY WALL

QUALITY

High tensile deformed steel side rods and butt-welded, trussed design cross rod combine to make Dur-O-wal an all-working steel reinforcing assembly.



TIED WALL





BONDED WALL

PROFIT

Dur-O-wal is a fast turnover, tie-in masonry item. Easy to stock, easy to sell, Dur-O-wal gives you a good margin of profit.

Nationally advertised, Dur-O-wal is a quality brand name, recognized at once by architects and builders alike. Nation-wide distribution of plants and jobbers guarantees prompt deliveries and low freight rates. For the name of your Dur-O-wal jobber, phone, wire or write today to Dept. 7T.

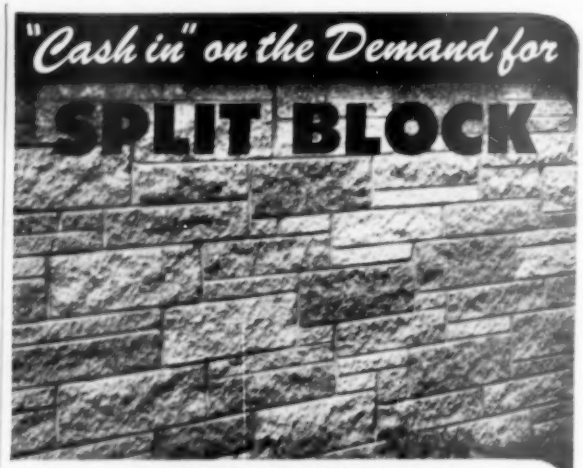
Trussed Design

Butt Weld • Deformed Rods

DUR-O-WAL®

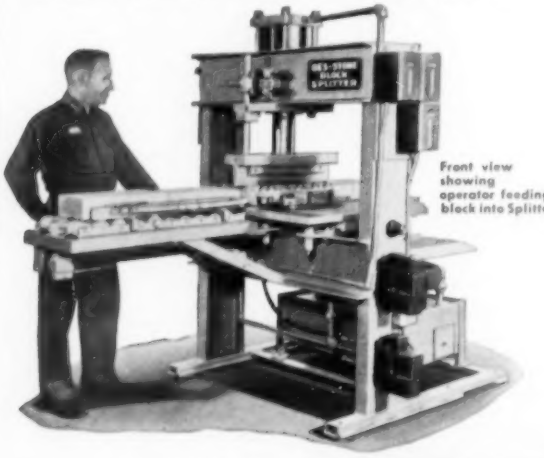
Dur-O-wal Div., Cedar Rapids Block Co., CEDAR RAPIDS, IA. Dur-O-wal Prod., Inc., Box 628, SYRACUSE, N.Y. Dur-O-wal of Ill., 119 N. River St., AURORA, ILL. Dur-O-wal Prod. of Ala., Inc., Box 5446, BIRMINGHAM, ALA. Dur-O-wal Prod., Inc., 4500 E. Lombard St., BALTIMORE, MD. Dur-O-wal Div., Frontier Mfg. Co., Box 49, PHOENIX, ARIZ. Dur-O-wal, Inc., 165 Utah St., TOLEDO, OHIO

Enter 1434 on Reader Card



Install a BES-STONE Splitter

You can greatly increase block sales and add to profits by using a Bes-Stone Block Splitter. Architects and builders are sold on Bes-Stone Split Block because of its beautiful quarried stone appearance and wide range of adaptability. With its powerful, hydraulic operation, the Bes-Stone Splitter handles up to 900 units per hour. All straight line cuts. No cull block. Quickly adjustable for various heights. Finished Split Block is automatically removed from under the splitting knife by the incoming block. Quiet, safe operation.



Front view showing operator feeding block into Splitter.

. . . and this

PONY TRIMMER

Comes in Handy for

Trimming Block on the Job

Trims off the ends of split block up to 8" in width. Pressure is supplied by a hand-operated hydraulic pump having a capacity of 12 tons. Compact, lightweight, and easily portable from job to job.



Ask your Besser representative for literature, or write:

BESSER COMPANY

Complete Equipment for Concrete Block Plants

ALPENA, MICHIGAN, U.S.A.

Enter 1435 on Reader Card

tegrity in an individual company and faith in a competitor's integrity. To keep a good market, all producers must be sold on the necessity of each company doing its part to uphold high standards. High standards can only be maintained when the selling price is commensurate with quality. Consistently using the price approach to land new business is an almost certain route to lower marketing standards.

In preparing merchandising plans for the foreseeable future, producers should consider the important matters of price protection and sales agreements.

Contractors want firm prices. We don't blame them; so do we. However, until our industry gets stability on its labor costs and receives firm prices on cement, aggregates, and transportation, we must make use of escalator clauses on construction work projected into the future. On work scheduled for completion beyond six months or extending into a second calendar year, producers simply cannot afford to give firm prices on ready mixed concrete.

When confronted with the demand for firm prices for a job with a distant completion date or for the whole year's work, a producer should keep in mind that if a contractor was mixing his own concrete he would have to pay increased costs on labor, material, and transportation that were in effect at the time the concrete was processed. He should be willing to either protect the ready mixed producer against increased costs or agree to a higher firm price that takes increased costs into consideration.

The sales agreement that is drawn up following acceptance of a producer's proposal should contain an escalator clause to protect the producer against actual provable cost increases. Some escalators are limited to actual increases in cement and labor costs. To help sell the idea of an escalator clause to a contractor, it might be wise, on the basis of available information, to limit an increase not to exceed so much per cubic yard (e.g. firm for six months; not to exceed 25¢ in the second six months; and not to exceed 50¢ in the second year of the project). If you use a printed sales agreement form, you should include at least a limited escalator clause, even if on some contracts, opposition to the clause is so great that a particular job cannot be secured without crossing it out. The regular appearance of an escalator clause in a sales agreement will have the growing effect of gaining general acceptance of such conditions as an integral part of a company's Sales Policy.

(Continued on page 176)



Here's what

This Lintelator can be equipped, at additional cost, with a concrete charging hopper to facilitate easy, rapid production.

Says about their KENT LINTELATOR

VIRGINIA DUNBRIK COMPANY
INCORPORATED

MANUFACTURERS OF THE LYNCHBURG BLOCK AND CONCRETE ARTS

April 3, 1956

The Kent Machine Company
Cuyahoga Falls, Ohio

Attention: Mr. Daniel Urban

Dear Sir:

Many thanks for the helpful service rendered by the Kent representative, Mr. Carl Worrell.

It might be worth something to someone to know our experience with our Kent Lintelator. First, during this company's twenty years in business we have been making only block, concrete-type brick and lintels. About three years ago we were forced to improve our lintel operation and came upon the Kent Lintelator.

Now after three years of continuous operation we give you our reason why you cannot get it back. One operator alone mixes and makes more than fifty stretels in an eight hour day on our Lintelator. These are better lintels - both true and good texture. This Kent Lintelator has practically no maintenance and our operator would never consent to reverting back to the old method of making stretels.

Needless to add, the Virginia Dunbrik Co., Inc. has found the Kent Lintelator a very good and most profitable addition giving us a stock of lintels to meet the demand.

In appreciation you may use this company as a reference and invite your prospects to visit here and see and talk with the Lintelator operator.

Very truly yours,

VIRGINIA DUNBRIK CO., INC.

A. Kendall Sydnor
Sec., Treas.

BETTER LINTELS... TRUE & GOOD TEXTURE

PRACTICALLY NO MAINTENANCE

WOULD NEVER CONSENT TO REVERTING BACK TO OLD METHOD OF MAKING LINTELS

A VERY GOOD AND MOST PROFITABLE ADDITION TO MEET THE DEMAND FOR LINTELS

INVITE YOUR PROSPECTS TO VISIT HERE AND TALK WITH THE LINTELATOR OPERATOR

You, too, can profit by the experience of Virginia Dunbrick Company.

A glance at their statement above is convincing proof that a Kent Lintelator is a definite money producing asset in any block plant today. Some plants have several in operation every working day.

You'll doubtless find a worthwhile market for lintels through the customers you are now selling.

Act now when the opportunity is "ripe" and ask us for the complete, interesting "Lintelator" story.

The KENT MACHINE CO. CUYAHOGA FALLS OHIO
DIVISION OF THE LAMSON & SESSIONS CO.
CONCRETE PRODUCTS MACHINERY SINCE 1925
Canadian Distributor: Wettlaufer Equipment, Ltd., 49 Morton St., Toronto 12, Ontario

Enter 1398 on Reader Card

This is the 122nd of a series of ads featuring leaders in the Concrete Products Industry who are stepping up block production with Besser Vibrapac machines.

Another BESSER BOOSTER

Vibrapacs are TOP Producers at this New Jersey Block Plant

Faber Cement Block Company, Inc., at Paramus, N. J. installed their first Besser Vibrapac in 1942. This machine was so successful in producing high quality block on a fast production basis, the company added more Vibrapacs as the need arose for additional equipment. Today they operate five Vibrapacs—three in plant No. 1 and two in plant No. 2.

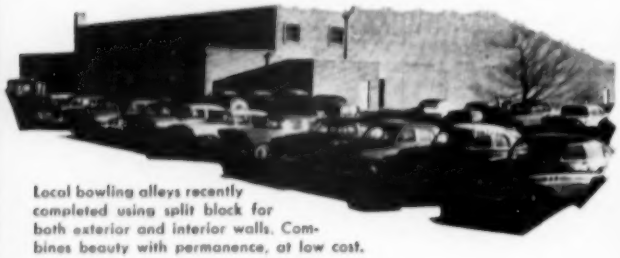
Albert Faber, Secretary-Treasurer of the Faber Company speaks very highly of his Vibrapac machines. *"We think they are the best."* This candid opinion is backed by more than 35 years of block making experience. Currently, production is at a peak at the two Faber plants. Block in all types and sizes, including split block, are supplied for homes, business establishments, industrial plants, schools, etc.

If you want to step up production of high quality block, look into Vibrapacs. Phone the Besser representative nearest you, or write:

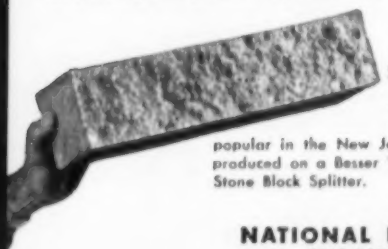
BESSER COMPANY • Box 135, Alpena, Mich., U.S.A.
Complete Equipment for Concrete Block Plants



One of the five Besser Vibrapacs installed in the two Faber block plants. Latest Vibrapac put in operation, April, 1956.

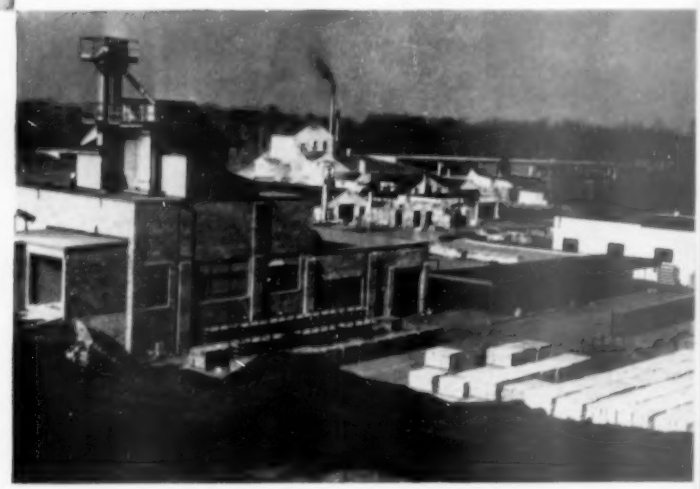


Local bowling alleys recently completed using split block for both exterior and interior walls. Combines beauty with permanence, at low cost.



SPLIT BLOCK

—the split block with quarried stone appearance is proving popular in the New Jersey area. Made from block produced on a Besser Vibrapac and split on a Bes-Stone Block Splitter.



Exterior view at Faber Cement Block Company, Paramus, N. J. The original plant is in the background. New plant, in foreground, was built in 1955.

NATIONAL HOUSING CENTER
WASHINGTON, D. C.
(Sponsored by NAHB)

Besser Company maintains a permanent exihibit at the Washington Housing Center. Be sure to visit this fine display of concrete masonry.



BESSER VIBRAPAC

first in concrete block machines

A 8863-1FBC

FOAMED SILICATES

(Continued from page 149)

Following these tests, a study was then made of the pressure-steam regime: 6 hr. was allowed for raising the steam pressure to 8 atmospheres; at an 8-atmosphere pressure, five variants of the steaming process were tried, -0, 2, 4, 6, and 9 hr.; the pressure was lowered to normal in 4 hr. through the unaided cooling of the autoclave.

From the results of these tests, the following principles were established:

The duration of the steaming process in the autoclave increases with a consecutive decrease in the cubic weight of the foam silicate. This is explained by the fact that during too prolonged a period of pressure-steaming, a surplus of binding matter is formed (consisting mainly of calcium hydrosilicate) in the more compact types of cellular concrete, in which more lime has been employed to each cubic meter. The result is that a thicker than usual layer of binding material forms about the sand grains, the adhesion of the binder to the grain of sand exceeds the cohesive strength of the binder itself, resulting in a rupture within the binder proper. Hence, a prolonged steaming cycle in this case is harmful.

Less binding matter is formed in foam silicate having less cubic weight, a thinner layer of binder forms around the sand grains even when free CaO is absent and a prolonged steaming cycle is necessary in the given case.

With a 1:3 lime-sand ratio, and a steaming of 0 and 2 hr., the strength of foam silicate having a cubic weight of 800 and 1000 kg. per cu. m. is lowered 10 to 25 percent as compared with mixtures with a 1:4 ratio.

However, the contrary takes place with a 4, 6 and 9-hr. steaming; the durability of foam silicate containing a 1:3 ratio of lime-sand is on the average 30 percent higher than that having a 1:4 lime-sand ratio. This is explained by the fact that a richer composition of the foam silicate demands more time for the chemical reaction to take place between the calcium hydrate and the silica of the sand, since the amount of calcium hydrate is 25 percent more with a 1:3 ratio, than when the ratio is 1:4.

This principle is not observed when the cubic weight is 600 kg. per cu. m., because in this case the porous factor is so great as to exclude the influence of the lime-sand ratio.

Foam silicate, produced by this technological process, possesses the following mechanical properties (Table 4):

Foam silicates possessing the abovementioned properties may be employed in the production of reinforced elements, built to take bending stresses. (Figs. 1, 2 and 3.) It is only necessary to anchor the reinforcing bars properly by means of the necessary hooks, anchor bars, welded joints, the use of reinforcement with deformed bars, etc.

The safety factor as well as the rigidity of reinforced foam silicate constructions depend entirely on the quality and quantity of the reinforcement; structural elements of this material may be designed so as to fully use the reinforcement.

If the structural members during their service are to be exposed to the action of moisture, a solution of sodium nitrite ($NaNO_2$) is added to the foam silicate mass to neutralize the corrosive action of the moisture on the reinforcing bars.

Table 5 illustrates the basic thermal properties of autoclave cellular concrete.

The resistance of foam silicate to various atmospheric action (frost, water, alternate wet and dry weather, etc.) is sufficient to justify its use in the construction of outer walls, provided that the outer surface of the foam silicate be protected from direct atmospheric influence by a layer of dense mortar or by moisture-proofing the exposed surfaces with the aid of

Table 4:

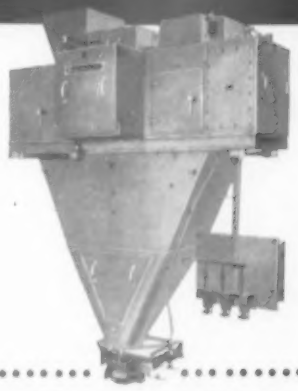
Cubic weight of foam silicate; Kg. per m³	Ultimate Strength When Dried Kg. per Cm.²			Modulus of Elasticity Under Compression Kg. per Cm.²
	Compression	Tension	Shear	
600	30- 40	4- 5	8-10	20,000
800	50- 70	6- 8	12-16	30,000
1000	80-120	10-13	20-24	50,000
1200	120-180	15-20	32-40	80,000

Table 5:

Cubic Weight of Foam Silicate kg/m³	Coefficient of Thermal Conduction in a Dry State kg.-cal. / m. deg. h.	Moisture Absorption in % % (of volume) With 60% Relative Air Humidity	Hygroscopicity in % % (of volume) With 100% Relative Air Humidity	Water Absorption in % (of volume) After 4 Days Gradual Immersion in Water	Steam Permeability x 10^{-3} g / m.h.mm. mercr. column
600	0.125	1.0-3.0	2.5-4.5	22-26	1.5 -1.9
800	0.165	1.5-3.5	3.5-5.5	28-34	0.9 -1.0
1,000	0.210	2.0-4.0	4.5-6.5	32-40	0.70-0.75

Dry mix proportioning and sacking

in one simultaneous operation with a Richardson



The Richardson Weighblender is ready made for the dry mix concrete industry! Inexpensively solving the weighing, blending, and sacking problems of a fast-moving production line, this unit blends any 3 of various ingredients in a mix (lime, too) at the rate of ten and more sacks per minute. Sack weights may be 25, 50, 80 or 100 lbs. . . . and, they're all *accurately* measured and proportioned.

After precisely weighing each ingredient in the mix, the scales discharge simultaneously, feeding the waiting sacks in a swirling motion for a uniform blend.

These added features complete the scale system and make it applicable to all dry mix operations:

- automatic sack holder when required
- sacks automatically counted and recorded
- bag conveying and sewing equipment available
- single unit E-50 bagging scales available where batching and mixing equipment are already at hand.

Send for Product Data Sheet #6041 for complete information.

Richardson

MATERIALS HANDLING BY WEIGHT SINCE 1902

RICHARDSON SCALE CO. • Clifton, N. J.

Branch offices in principal cities in the U.S. and abroad.

Enter 1408 on Reader Card



Simplex Hydraulic Pullers Make Concrete Prestressing A Real Profit Opportunity for You!

Standard Units Available from 10 to 100 Ton Capacity

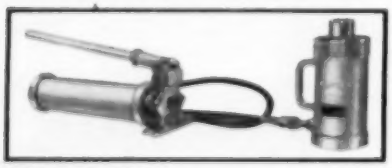
Prestressing concrete structural units becomes a quick, easy task with Simplex hydraulic equipment. Thanks to the "center-hole" pulling feature of Simplex units; wires, rods and cables can be tensioned without torque, "off-center" pressures or complicated back-up devices. Eliminating these factors accounts for a 75% increase in ease and efficiency.

Simplex "Re-Mo-Trol" units consist of a "center-hole" pulling hydraulic ram connected by high pressure hose to a hand, air, electric or gasoline operated hydraulic pump. This powerful combination permits uniform stressing with maximum operator safety and speed. Once the ram is in place, the pump can be actuated from any nearby convenient location.

"Re-Mo-Trol" hydraulic pullers are ideally suited for prestressing operations. Whether you operate full-time permanent pre-tensioning beds or have only an occasional call for stressed structural units, Simplex offers a model for your express needs. These versatile Simplex units are available in standard capacities from 10 to 100 tons, and can be used directly on cables, rods or wires for heavy tonnage high-pressure tensioning or for pushing or pulling against a holding bracket in multiple bed stressing operations.

The standard Simplex units provide a range of capacities sufficient for most applications. However, custom-built units are available up to 600 ton capacity.

For detailed data on the selection and application of "Re-Mo-Trol" Pullers for prestressing concrete and other construction jobs, write for your copy of our new bulletin: "Hydraulic 56".



SIMPLEX "RE-MO-TROL"—Remote-Controlled Unit has ram connected to hydraulic pump by high pressure hose for safe, convenient use in tight spots and dangerous locations. A pressure gauge may be installed for checking tensioning pressure.

SIMPLEX "JENNY" is a hydraulically operated center-hole puller which also serves as a press or heavy duty jack. It is a self-contained unit available in capacities from 30 to 100 tons.



TEMPLETON, KENLY & CO.

2563 Gardner Road • Broadview, Illinois

Enter 1386 on Reader Card

various silicone products. The durability of foam silicate increases for a period of 80 to 90 days, after which its strength remains permanent.

Besides autoclave foam silicate structural parts, a number of plants in the U.S.S.R. are producing ordinary (non-foam) high pressure-steamed construction elements: large wall-and foundation-block, floor-bearing slabs, partition slabs, flooring, and other materials.

BLOCK TO PIPE

(Continued from page 162)

carried to the curing rooms by a Hyster fork lift truck. The pipe are cured in wet steam at about 120 deg. F. at 15 p.s.i. for 24 hr. and then kept under a fine water spray for 7 days. Steam is supplied by an 80-hp. Pacific boiler.

The 84-in. pipe which, with jacket, header, core and pallet, weigh 32,000 lb., are handled by an especially designed rig converted from a ¾-ton, four-wheel drive weapons carrier purchased from war surplus. The weight is supported by a yoke fabricated from 8-in. "I" beams.

Compression tests on pipe are made on a testing stand designed and built in the plant. This includes a 50-ton Black and Decker hydraulic jack.

The pipe plant operates on a 50-hr. week. The daily schedule is 9 hr. and 5 hr. on Saturday. The working force totals 27 men. Pipe is delivered within a 100-mile radius of the plant. Larry D. Cook is plant superintendent.

The Evans company's concrete block plant at another location, has a daily capacity of 4000 standard 8- x 8- x 16-in. block with one Stearns Joltcrete No. 9 block machine. The block plant employs 17 men.

Officers of the Evans company are Robert E. Bartlett, president; Howard C. Gammon, vice-president; Paul K. Welsh, general manager and treasurer; and Louis Lowe, secretary. Mr. Bartlett is a home building contractor, and head of Kessler Homes, Inc. Mr. Gammon is a plumbing contractor.

•

NATCHEZ GRAVEL CO., Natchez, Miss., is expanding operations to include manufacture of concrete block. The plant will have a capacity of 8000-9000 units per day. Split concrete stone in a variety of colors will be included in the company's line. E. Willard is president of Natchez Gravel Co.

D. W. DICKEY AND SON, Lisbon, Ohio, have constructed a ready mixed concrete plant with a 100-ton aggregate bin and 400-bbl. cement bin. The company has two mixer trucks.



New Barber-Greene conveyor, erected in just 2½ days after the fire, boosts tonnage from 250 tons a *day* to 250 tons per *hour*.

Conveyor destroyed by fire on Monday
New one operating Friday

On Monday fire roared up a wooden conveyor owned and operated by a Milwaukee cement block company. Out of the devastation only the wooden "A" frames remained. Without the conveyor, production was at a standstill.

At 6:00 the following morning the owner called the local Barber-Greene distributor to see what could be done. Drawing from his own stock of standardized conveyor components—trusses, idlers, drives—the distributor was able to rush all the necessary components to the burned out plant by noon. And by Friday morning the new conveyor was erected and operating.

This fire and the quick return to normal operations point up the basic advantages of Barber-Greene *standardized* components. These advantages include: quick delivery from stocks of standardized components . . . elimination of engineering time required when building "custom-made" conveyors . . . and fast, easy erection.

Trouble-free operation is an additional benefit of the factory aligned and adjusted drives and terminals. Flexibility in shortening or lengthening your conveyor is another plus.

Write for information on Barber-Greene *Standardized* conveyor components

56-12-PE



Barber-Greene BG

AURORA, ILLINOIS, U.S.A.

CONVEYORS . . . LOADERS . . . DITCHERS . . . ASPHALT PAVING EQUIPMENT

Enter 1411 on Reader Card

MERCHANDISING READY MIX

(Continued from page 171)

Spurred on by the leadership of N.R.M.C.A.'s Merchandising Committee, headed by Bob Collins, it has become general accepted practice for ready-mixed concrete producers to make job proposals in writing and to have any contract entered into, after proposal acceptance, set forth in a printed sales agreement. In the words of our national committee on sales agreements "Printed forms, limiting and specifying respective obligations, prevent misunderstandings and the development of ill will and expensive and protracted litigation is thus often avoided". It is the considered opinion of our national committee on this important matter that a printed quotation and sales agreement form is absolutely essential.

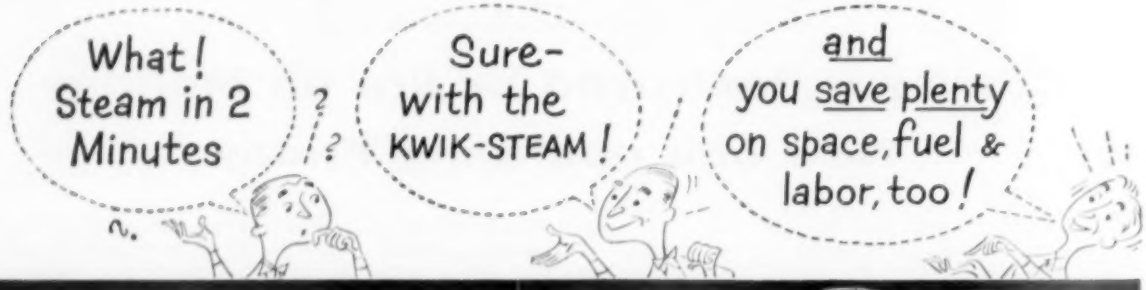
The national committee has prepared a suggested form that is easily adaptable to the needs of any particular producer. Before beginning the preparation of his own proposal and sales agreement form, a producer should carefully study the pamphlet "Standard Clauses for Sales Agreements in the Ready Mixed Concrete Industry". This pamphlet is available to member companies through the offices of the National Ready Mixed Concrete Association. A contractor on a large project may insist upon preparing the sales agreement covering that work, but certainly an alert producer will see to it that points important to him are included in the finished memorandum.

A producer's quotation should include a description of the concrete on which the bid is based—slump range, strength, type and amount of cement, air content, and the size of coarse aggregate. The quotation should be made subject to the terms and conditions printed on the opposite side of the proposal. It should be stated that upon acceptance of the proposal, the whole contract will be put in writing through the execution of a sales agreement. The quotation should include a time limit for the acceptance of the proposal. It should limit the starting and completion dates. The quotation should contain an escalator clause so worded to at least protect the producer against increased labor and material costs. A proposal clause should set forth dates when payments are due and state the amount of discount to be taken if payments are made on or before the designated dates.

The sales agreement should cover such matters as advance order notice; delivery commitments; act of God, etc.; threat of strike; danger to equipment; access road provisions; damage to property and equipment; overtime deliveries; arangements for prompt unloading of truck mixers (possibility of credits and debits); waiting time charges; deliveries of partial loads; delivery of excess yardage; conformance with specifications; strength commitments based on A.S.T.M. specifications; inspection and testing services; adding of water on job; use of admixtures; provisions for exceptions; and claims and arbitration of disagreements.

A discussion of concrete merchandising brings into focus practically all elements of a producer's operations. On a telephone call involving a possible order, the man on the phone is your company to the prospective customer; on the job, the driver of the truck is your company to the contractor and his employees; the field man is your company to the architect, testing engineer, cement finisher, or property owner. A successful producer is not only quality minded about his concrete; he must also be quality minded about each individual who represents the company under any given condition.

A producer and all employees should realize that a good customer is a valu-



LITTLEFORD KWIK-STEAM VAPOR GENERATOR

Yes, you get full pressure steam in 2 minutes from a cold start with the Littleford Kwik-Steam Vapor Generator! Exclusive automatic modulatic control reduces fuel and labor costs 50%. Compact design saves valuable floor space and cuts installation cost. Unit is shipped complete, ready for mounting on concrete base. And be sure to check the Littleford pile pounder generator which can easily be mounted on truck, crane or trailer. Write today for bulletin 22, Littleford Bros., Inc., 400 E. Pearl St., Cincinnati 2, Ohio.



LB LITTLEFORD

Designed exclusively for generating steam for ready-mix, pile driving, concrete curing products, asphalt plants.

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New "Specs" for handling pipe

—move it on rubber!

You can move pipe where you want it, when you want it—without any waiting. You can set up your own on-the-job storage yard from otherwise unused ground around a work site.

Rough terrain, mud and bad weather are no problem for the big Clark pneumatic tired fork trucks. Balanced weight distribution and large sized tires guarantee positive traction. Low center of gravity combined with high underclearance provides exceptional operating characteristics under all types of weather conditions.

IT'S THIS FLEXIBILITY OF CLARK'S PNEUMATIC TIRED FORK TRUCKS THAT IS SETTING NEW SPECIFICATIONS FOR PIPE HANDLING OPERATIONS.

Here's a truck that is a new standard for the industry. Your local Clark dealer can supply details on how Clark's pipe handling pneumatics can increase profits in your operation. Or, write for specification sheet.



CLARK® EQUIPMENT

A BETTER BUY WITH LOCAL SUPPLY—*Genuine Clark Parts*

Industrial Truck Division
CLARK EQUIPMENT COMPANY
Battle Creek 60, Michigan

able asset of their company. Having a good customer means jobs for some employees. In some operations, one outstanding customer might well be the difference between profit and loss. Having many good customers assures jobs for all employees, profit and success for the producer. A dissatisfied customer is something for all to avoid. The loss of a good customer means a curtailment of labor hours. It probably costs a minimum of $100 to get a regular customer on a company's books. It certainly costs at least five times that much to get a customer back who had become dissatisfied. In really competitive markets, the producer may never get a second opportunity to handle "lost" customers.

If a customer is displeased over the attitude of our order taker, dispatcher, field men or drivers, he will be critical of our concrete and service. When he needs concrete again he will be tempted to order from our competitor; he may be mad to the point where he'll want to tell every contractor in town how lousy he thinks we are.

The importance of employee cooperation in gaining and holding customer approval can be shown by briefly discussing the procedural steps necessary to adequately handle a large project that has just been secured.

The service program to take care of a large construction project should be thoroughly understood by all key employes. Probable job problems should be carefully covered in a meeting (or meetings) of the salesman, fleet superintendent, dispatchers, and service engineers. The salesman who sold the job should outline commitments that have been made on service and quality. The matter of mix designs should be thoroughly understood. Careful consideration should be given to planned job unloading practices and the number of cubic yards that will be required per hour. Arrangements should be made to have the salesman at the project when concrete work actually starts and for him to make periodic visits until the project is completed.

A designated service engineer should find out a number of answers about the job:—how many cubic yards in the project? What is the placement schedule? What size pours are planned? What will be the hourly yardage requirements? What will be the maximum daily requirement? the minimum? Can work be arranged on some days to give a full or nearly full 8-hr. delivery schedule? Can concrete that does not have to be finished be generally scheduled for afternoon delivery? Can arrangements be made for an increased number of afternoon pours? Will contractor cooperate by making slow pours after the lunch hour? Do job conditions permit good access and easy truck maneuvering? Should some work be done by contractor to make delivery points more accessible? Is any certain size of truck mixer preferred? What advance notice can contractor give on service requirements? If concrete will not be required for a scheduled placement, can contractor give dispatch office an early cancellation notice? To help speed up driver performance will contractor cooperate by either having unloading time marked down on delivery tickets or at least make a number of spot-checks on unloading times?

The service engineer should decide how many mixer trucks will be required to handle the contemplated hourly average. Before deliveries actually begin, he should figure out length of time required for a return trip, including loading time, time on the road (coming and going), and minutes required to unload truck mixer under stated job conditions. During sizable pours he should be on the job to correlate deliveries with actual job requirements. In determining the number of trucks necessary to handle hourly average, the engineer should consider the peaks and dips of road traffic. During hours of congested traf-

(Continued on page 181)

JIFFY LIFT



THE REVOLUTIONARY UNIT FOR LOADING AND UNLOADING BLOCK, BRICK, CEMENT, PRECAST UNITS

Today's solution to mounting delivery costs. Slashes loading and unloading time with less danger of chippage or damage.

Costs only a few pennies a day to operate. Pays for itself in four months or less. Handles 10,000 lbs. with ease and safety. One man operation from either side of truck quickly, safely.

Four wheel drive and four cable suspension eliminates dangerous swinging, saves time. Easily, quickly installed. Sturdily built, minimum of maintenance.

TWO MODELS, TWO CAPACITIES, TWO OVERHEAD CLEARANCES TO CHOOSE FROM

Write TODAY for Bulletin giving full details about Jiffy Lift.

ELBERFELD MANUFACTURING COMPANY, INC.

ELBERFELD **INDIANA**

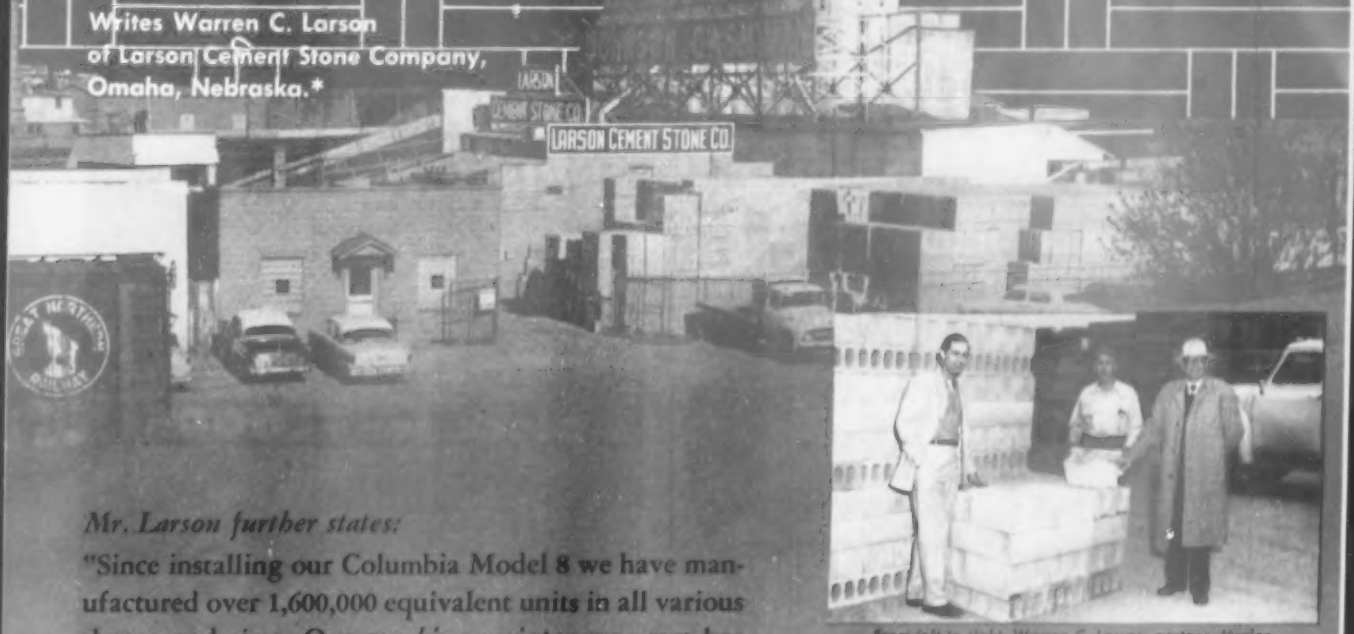
Enter 1399 on Reader Card

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Columbia Model 8 MACHINE MAINTENANCE

1/10 OF A CENT PER BLOCK!

Writes Warren C. Larson of Larson Cement Stone Company, Omaha, Nebraska.*



From left to right: Warren C. Larson, partner, Marion Gilpin, plant foreman, and Clifford L. Larson, partner.

Mr. Larson further states:

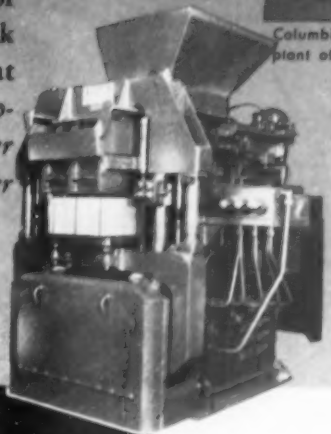
"Since installing our Columbia Model 8 we have manufactured over 1,600,000 equivalent units in all various shapes and sizes. Our *machine maintenance* cost has amounted to approximately *1/10 of a cent per block.* Figuring overall . . . our total machine and mold replacement parts costs have amounted to *1/4th of a cent per block.*

"Couple this with the fact that we are producing a block which has the very best of customer acceptance in a city where from 7 to 8 million blocks are sold every year . . . and you can see why we are very happy to be on the Columbia team."



Columbia Model 8 (2-block) machine is shown in operation at plant of Larson Cement Stone Company, Omaha, Nebraska.

Mr. Larson's comments are typical of those received from hundreds of block manufacturers who have found that Columbia Block Machines and equipment mean *greater production* at *less per unit cost* . . . with *proportionately higher profits.*



The complete text of Mr. Larson's letter will be sent on request.

If you are planning a new plant, a plant expansion or would like to discuss any production problem, write or phone us . . . and we will have a qualified man in your plant within 24 hours. No obligation. Call OXford 4-1501.

Columbia MACHINE

Home Office: 107 S. GRAND, VANCOUVER, WASHINGTON

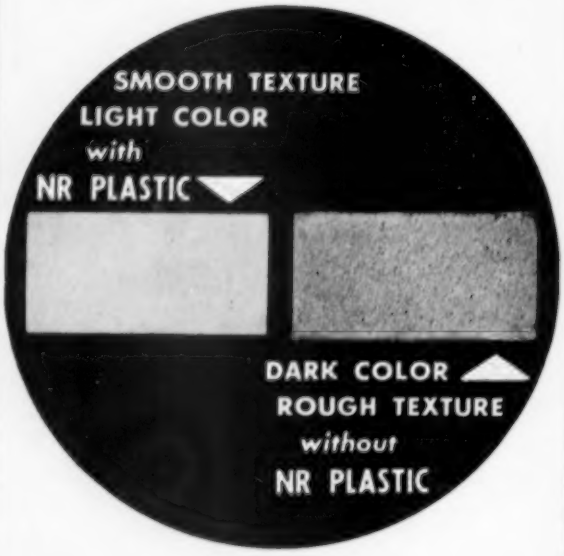
Factory Branch and Warehouse at Mattoon, Illinois.

District Offices in: Wisconsin, Illinois, South Carolina, Mississippi, Florida, New Jersey, Virginia, California, Massachusetts, Texas, Montreal, Toronto, Vancouver, B. C.

FOR ½ CENT

PER BAG OF CEMENT

YOU PROFIT TEN WAYS!



Only NR PLASTIC

Gives You *All* These Advantages

- Smoother Finish
- 20% Lighter Color
- Denser Surfaces
- Sharper Corners
- Greater Plasticity in the Green Unit
- Complete Hydration
- Reduced Moisture Absorption
- Fewer Culls
- Faster Stripping
- Less Mold Box Wear

Add *DRY* as it Comes From the Container
Write for Literature and FREE 3 Lb. Sample

Edick LABORATORIES
427 W. National Ave., Milwaukee 4, Wis.

MAIL COUPON FOR FREE SAMPLE

Edick Laboratories, Inc., 427 W. National Ave., Milwaukee 4, Wis.
Please Rush Sample of NR PLASTIC
Name .....
Company .....
Address .....
City ..... State .....

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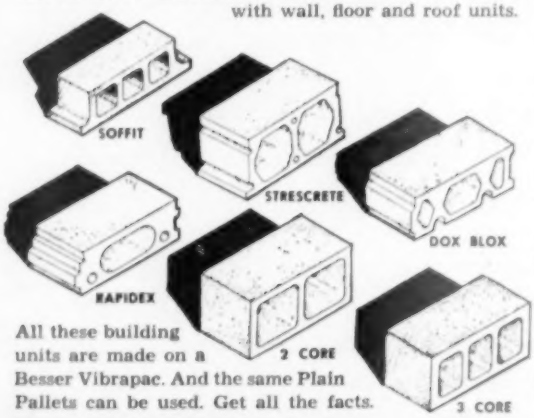
Go After the Entire Market!







Fire-safe walls? Of course! But floors and roofs should be fire-safe, too. Walls are full of openings (windows, doors, etc.), while floors and roofs are relatively solid. Actually, TWICE the volume of block is required for floors and roofs than is required for walls. So why not go after this profitable market? Supply customers with wall, floor and roof units.



All these building units are made on a Besser Vibrapac. And the same Plain Pallets can be used. Get all the facts.

Write for Bulletin

BESSER COMPANY
ALPENA, MICHIGAN, U. S. A.
Complete Equipment for Concrete Block Plants



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MERCHANDISING

(Continued from page 178)

fic, plans should be made to put additional units on the job. When mixer trucks are radio equipped, engineer should arrange for drivers to report arrival at job, time unloaded, give notice of approach to plant, and advise dispatcher of exact time of leaving plant.

Contractor customers generally like to tell our dispatchers how many trucks they want on a job. Too many dispatchers are willing to buy contractor peace at the expense of fewer daily trips by mixer trucks. Actually the number of trucks that will be required is largely dependent on the number of unloading points and the average time taken to unload truck mixers. A customer may say that he wants twelve trucks, yet be limited by unloading conditions to the efficient use of only seven or eight units. A line up of waiting trucks ruins profit possibilities for that day. Cutting back to number of units actually required means increased profits for the producer. All operators expect their drivers to report job holdups and to suggest removal of several units if fewer truck mixers can efficiently handle a job. Unfortunately, too many drivers,

(Continued on page 182)

Add a New Profit-Maker

increase your volume

PRODUCE CONCRETE JOISTS, LINTELS AND FENCE POSTS with the KIRK & BLUM HEAVY DUTY VIBRATING TABLE

Your experience in the building trade should make it easy to build up a profitable business in this new line. The products are simple to make, have unusual strength, are termite proof. The KIRK & BLUM Type "S" Heavy Duty Vibrating Table is capable of multi-production of concrete joists, allowing a fine profit-margin. Easily produced by unskilled operators. For complete details and prices, write to The Kirk & Blum Mfg. Co., 3210 Forrer Street, Cincinnati 9, Ohio.



Only Small Investment Required!

The Kirk & Blum Vibrating Table requires a small initial cost, lets you make an entirely new line of 8", 10" and 12" joists in 20 and 24 ft. lengths.

KIRK & BLUM

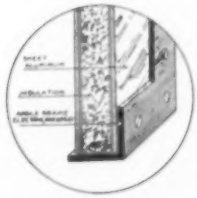
Manufacturers of steel forms of all types . . . Curb, Gutter, Sewer, Road

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Moore Carrier-Type Doors at Glynn Concrete Co., Brunswick, Ga.



Moore Metal-Insulated Kiln Doors Save Fuel—Reduce Curing Time



Keep heat where it belongs—inside the kiln—with Moore Aluminum-Insulated Doors. They improve curing conditions — save steam—last longer.

Send us dimensions of present door openings for quotation.

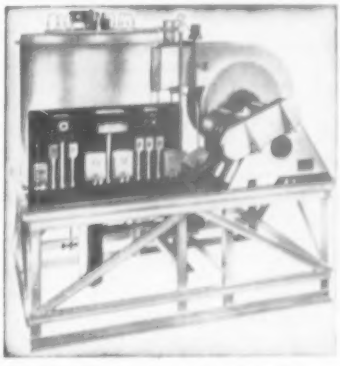
MOORE DRY KILN COMPANY

Oldest and Largest Manufacturers of Lumber and Veneer Dryers

JACKSONVILLE FLORIDA · BRAMPTON, ONT. CANADA · VANCOUVER, B.C. CANADA · NORTH PORTLAND OREGON

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"For Autoclave Competition"



THE "CUROLATOR" BY CAMPION

The result of ten years research and experience carried out in the largest concrete products plants in the country.

Gives you a STRESS-FREE block with MAXIMUM VOLUMETRIC STABILITY.

Installation and operating costs are only a fraction of that involved in an autoclave.

FULLY AUTOMATIC. Faithfully reproduces any predetermined curing cycle regardless of atmospheric conditions.

CAMPION-DETROIT COMPANY

P.O. BOX 3943P · DETROIT 27, MICHIGAN

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WHAT'S NEW FOR BLOCK MANUFACTURERS

BY J. J. PARKSON
CHIEF CHEMIST, EDICK LABORATORIES

RACK RUST STOPPED FOR GOOD

A new chemical discovery makes it possible to completely stop corrosion and permanently prevent rust from forming on racks. It is called RAC-KOTE.

Having exceptional rust, chemical, alkali, and water resistance, RAC-KOTE is a tough, chemically active coating that provides racks with a minimum of one year's protection. Annual application results in permanent protection from rust and corrosion.

Chemists don't usually become involved in the dollars and cents angle of product development, but in the case of RAC-KOTE we've taken time out to do a little figuring on the important savings this new product can mean to a block manufacturer!

The average life of a rack is five years, so plants generally figure on replacing 20% of their racks each year. But now, RAC-KOTE eliminates rack replacement. . . . actually saves you $800.00 a year for every hundred racks in your plant. Here's how:

Yearly replacement of 20 racks	= $1000.00
Cost of protecting all 100 racks with RAC-KOTE	= 200.00
Saving each year	= $ 800.00

And in addition to keeping racks free from rust, RAC-KOTE gives you other benefits. . . .racks retain their original strength and dimensions, eliminating weakened legs, distortion, binding of pallets, also eliminates rusty condensate water that can mar the block's appearance.

RAC-KOTE is easy to apply to old or new racks with either brush or spray. One gallon protects five racks. Drying time is 8 hours; overnight, racks are ready to use. It's that simple!

Stop rust and corrosion from eating away *your* profits. Order RAC-KOTE today for both old and new racks. In 5 gallon containers, $10.00 per gallon. Freight allowed to all points in U.S.A. Use this handy order form. Start saving right away!

Edick Laboratories, Inc.
427 W. National Ave., Milwaukee, Wis.

I want to cut costly rack replacement. Please rush .... 5-gallon cans of RAC-KOTE.

Name .....

Company .....

Address .....

City ..... State .....

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showing little concern for the necessity of a profit by their employer, are content to limit their productive efforts to fewer trips per day. On big jobs it generally takes complete cooperation between the field engineer and the dispatcher to keep deliveries running smoothly.

In planning daily delivery schedules, many dispatchers don't consider how long return trips will take, don't know or don't find out how long, on the average, it will take to discharge a mixer at the job. Too many dispatchers don't use past experiences as a guide for estimating time of trips on a similar job involving the same contractor. Many dispatchers fail to use individual trucks to best advantage. Others fail to pick a hustling group of drivers who will push a job.

During an operating day, some dispatchers permit late reporting of plant men and drivers; delayed plant opening; stalling in getting equipment ready; indifferent loading of truck mixers; driver loafing around office; unnecessary stopping on way to job; and poor job handling. These same dispatchers fail to compare actual trip times with anticipated "averages"; make no checks of time actually spent on unloading; get few, if any, reports on job holdups; continue to use drivers on important work who are always getting stuck, or otherwise delaying deliveries; hesitate to cut back number of units being used even though they've been advised that trucks (too many) are lining up; and are generally afraid to reprimand time wasting drivers.

Dispatchers' shortcomings, such as just mentioned, will ruin any merchandising program. Effective control over the work of order takers, dispatchers, plant men and drivers is a most important factor in the success of a producer's merchandising efforts.

All ready-mixed concrete producers constantly face the problem of trucks running behind schedules. Most dispatchers and drivers generally blame the contractor customers for slow trips. In some operations, the charge of contractor blame is accepted too readily. In many cases, the blame belongs to slow drivers and to dispatchers who don't know their business.

Producers who are seriously bothered with slow job unloading conditions should consider the advisability of adopting an incentive program to secure contractors' cooperation in more efficient job handling of concrete. An average par is set for unloading; e.g., an average of 5 minutes per cubic yard may be established. A credit is given to a contractor for any load discharged in less time than the agreed

(Continued on page 185)

CALL ON Quinn For QUALITY CONCRETE PIPE FORMS

"STANDARD" The World Over



Backed by over 45 years of reliable service, the QUINN Heavy Duty form is recognized as the STANDARD design and the finest concrete pipe form everywhere. Used in making pipe by vibration, spading or tamping. Sizes for pipe from 10" to 120" and larger. Tongue and groove (as shown) or bell end pipe in any length desired. If your pipe orders specify extra large sizes, odd shapes or unusual lengths, there's a Quinn form made to produce the finest pipe at lowest possible cost.

Also Manufacturers of
QUINN CONCRETE PIPE MACHINES



Free CATALOG

Illustrates our complete line of equipment. Contains pages of valuable tips for the concrete pipe manufacturer. Write today for your free copy and estimates.

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BOONE, IOWA

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SAVE MONEY!
UNUSED
6X6 ARMY TRUCKS



International & GMC 2½-ton

- From Government Storage!
- Unused and Guaranteed!
- Factory New Condition!
- Reconditioned Trucks also Available!

Save up to $3,000 on one of our unused Army trucks. See for yourself how TWO of our trucks cost you even LESS than *one* new truck.

Compare our Tandem Axle Trucks with front wheel drive, 10 forward speeds, overdrive and new mud and snow tires with similar equipment elsewhere.

Investigate now! . . . There's no obligation . . . and we deliver on approval!

For Specifications, Prices, Delivery Write, Wire or Phone Collect—JAckson 5-7841
MILTON Y. TOOMBS, JR.
Sales Manager

MEMPHIS EQUIPMENT CO.
766 S. THIRD ST. MEMPHIS, TENN.

CONSTRUCTION AND AUTOMOTIVE EQUIPMENT AND PARTS.

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NOW! ONE SUPPLIER RESPONSIBLE FOR ALL CONTROL EQUIPMENT

PRECISION BATCHING

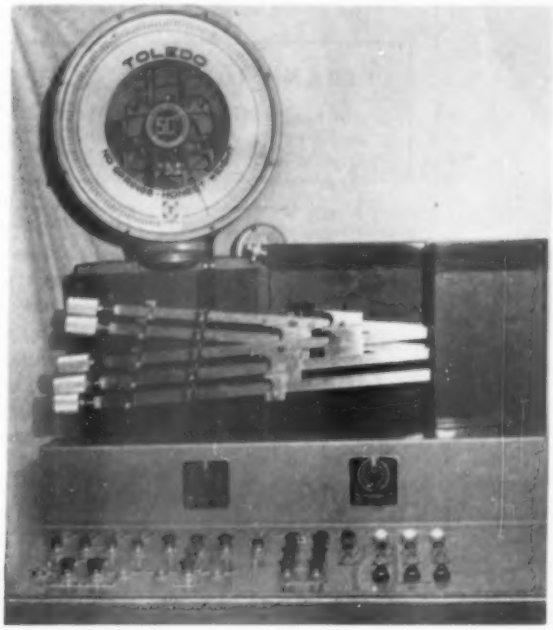
INCLUDES . . .

1. CONTINUOUS AUTOMATIC ELECTRONIC MOISTURE DETERMINATION. This uses a high frequency electric current which eliminates most of the variables that make resistance measurement unreliable. It measures moisture content of both fine and coarse aggregates and also artificial aggregates to a tolerance of ¼%, through the whole range from 0% to 15%. The probes are located just above the discharge gates which measures moisture content as the aggregate drops into the weigh hopper. Moisture content, so measured, can be read from a dial or recorded on a graphic chart.

Precision batching gives required strength with less cement; saves on excess yield and always increases sales.

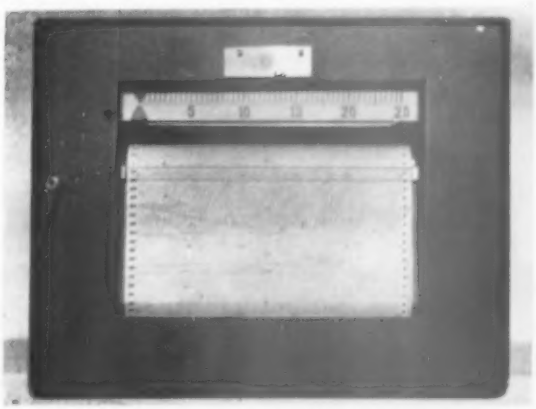


FOR SALE OR LEASE



2. AUTOMATIC BATCHING SCALES FOR PLANTS OF ALL SIZES. Uses compensation discs to compensate for moisture content. This, with the automatic moisture determination, enables the operator to deliver the dry weight of wet aggregates and total water to a tolerance of ¼%, which means slump control to less than an inch. One push button starts the batching which proceeds automatically to completion. It is simple, fast and accurate. Available for automatic, semi-automatic and manual operation.

3. AN AUTOMATIC GRAPHIC RECORDER that records the delivered weights of aggregates, water and cement on a single chart 12 inches wide, using one ink color for aggregates and another for cement.



Write for free bulletin containing full information

Scientific Concrete Service Corporation

SCIENTIFIC SC CONCRETE

724 Salem Avenue — Elizabeth 3, N. J.

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Columbia HEAVY-DUTY RACKS ARE NOW AVAILABLE FROM OUR FACTORY BRANCH AT MATTOON, ILL.

Now . . . Columbia Heavy Duty Standard racks can be shipped to your plant within a few days after your order is received. Columbia can also custom design racks from your blueprints or measurements to fit your special plant requirements.

Racks are ruggedly constructed of high quality steel for all pallet and block sizes...and can be shipped sub-assembled for compact delivery and easier handling.

Send dimensions for your rack requirements to Columbia's engineering department. You will be furnished with prices at no obligation.

TURNTABLES

Ask about Columbia's new one, two and three-rack motor-driven "push-button control" turntables. Also available in manual, semi-portable and fixed position combinations.

District Offices in: Wisconsin, Illinois, South Carolina, Mississippi, Florida, New Jersey, Virginia, California, Massachusetts, Texas, Montreal, Toronto, Vancouver, B. C.

Columbia MACHINE

Home Office: 107 S. GRAND, VANCOUVER, WASHINGTON

Factory Branch and Warehouse at Mattoon, Illinois.

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PURE SYNTHETIC IRON OXIDE

HTS Goldenrod

(High Tinctorial Strength)

LIGHT-FAST

in sunlight and weather

INEXPENSIVE

1 lb. equals the coloring power of 2 lbs. of competitive grades.

VARIETY

Available in several shades to obtain "Adobe", "Suntan", "Amber", "Buff".

Write us or our nearest representative for working samples and more detailed information

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Improve moisture control, speed loading, save space with Neptune Auto-Stop water meters. Set by pushing buttons; meter cuts off automatically. Excellent reputation for sustained accuracy and trouble-free operation. *Ask for Bulletin 562 WRP*

FOR READY-MIX PLANTS AND BLOCK PLANTS



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Branches and Distributors in Principal Cities

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MERCHANDISING

(Continued from page 182)

average; a contractor is debited at an agreed hourly charge for any extra time that is required for unloading.

In an incentive arrangement of this type, the time of the driver's arrival on a job is marked down on the delivery ticket by an employee of the contractor; when the truck mixer is empty, that time is recorded on the driver's ticket. Producers who use an incentive program to expedite unloading, report (1) either big contractors receive a credit for unloading efficiency, or in failure to receive a credit, place the responsibility on the job superintendent; (2) savings from improved job efficiency more than offset any waiting time penalty charges that a contractor must pay; (3) contractor speed-up leads to trip time speed-up. Drivers hesitate to hold back, and more trips per day naturally follow.

Whether a producer has an incentive program for truck unloading or not, all of us should remember that while slow unloading time is costly to us, it is generally much more expensive to the contractor. Producers should make customers realize that they aren't particularly interested in any penalty payment they may receive from contractors; what they want is the truck so that they can continue to make on-time deliveries of reasonably priced concrete. In merchandising his concrete, a producer, who can prove job savings due to faster unloading of concrete, has a most important talking point.

The appearance and efficient operation of concrete plants can be a real help in sales and merchandising efforts. Good housekeeping and efficient operations seem to go together. All producers should realize that unless a plant is properly maintained through good housekeeping, the plant can become a sales deterrent. The use of

(Continued on page 186)

Make New Profitable Savings With **Rinson Fork Lift Trucks'** Block Yard-to-Scaffold Delivery



LOADING a truck with block or brick is quick and easy with a Rinson Fork Lift. A Rinson goes into tight places for loads, lifts up to 15,000 pounds; spots loads quickly wherever needed on the truck. Standard Ford Truck parts mean easy maintenance.

TOW Rinson Fork Lifts at highway speeds. Built-in tow-bar drops into place; forks fold up, save 4 ft. of length. Take your Rinson anywhere. Lights, steering axle, tie-in braking system, and 4 wheels on the ground give you more speed and safety on the road and on the job.





DELIVER on the job. One man and a Rinson unload quickly. Lift carries 50 or more blocks over curbs or rough ground. You elevate up to 20 ft. for stacking or scaffold work. Do hours of work in minutes. Rush a Rinson for quick yard-to-scaffold deliveries.

ENJOY new profits with a Rinson

- Lifting weights to 15,000 lbs.
- Lifting heights to 20 feet.
- Equal braking—forward & reverse.
- Standard & custom-built models.
- Priced from $3665.

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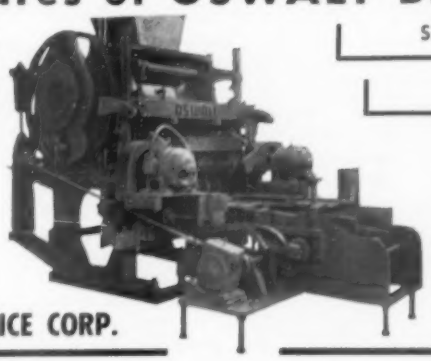
Exclusive Features of OSWALT BLOCK MACHINE

Shock-Free Block Ejector

Front End Pallet Feeder

Simplified Height and Density Control

Improved Vibration and Speed-up



This modern design combines the many advanced operating features, developed by Oswalt engineers in the past 35 years.

Gives maximum production without sacrifice of quality.

Built for heavy-duty, high speed and relaxed operation.

This shows the type of installation at Cement Block Industries, Miami, Florida.

Write for new Brochure of OSWALT Block Machine

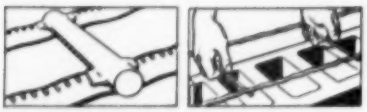
OSWALT ENGINEERING SERVICE CORP.

1335 CIRCLE AVE., FOREST PARK, ILL.
Phones: EStebrook 8-4664, FOrest 6-2798

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For
STRONGER WALLS
USE WAL-LOK IT BONDS BETTER
Mortar Joint Reinforcing

THE WAL-LOK WAY



When a mason uses reinforcing in a masonry wall, he lays the reinforcing right on the last course. With WAL-LOK, Cross Rods are welded across the Side Bars. The mason puts WAL-LOK on the wall with the Cross Rods DOWN.



The Cross Rods hold the Side Bars up away from the blocks and the mortar completely surrounds each Side Bar. With WAL-LOK, the mortar grips all the way around!

All WAL-LOK is also deformed and knurled for a positive bond the full length. All this still permits a quarter inch mortar joint.

THE WRONG WAY



With ordinary reinforcing, where all the wires are butt-welded in one plane, the Side Bars rest right on the blocks. The mason puts on his mortar. Steel doesn't float, so the mortar can't get under the Side Bars and the mortar bonds only to the top and sides.

WHY EXPECT MORTAR TO DO SOMETHING YOU CAN'T DO?



When you try to hang onto a rod, you don't hold it with your finger tips. You grip it in your fist with your fingers wrapped all the way around.

Why gamble—on cracked walls or wall failures. WAL-LOK costs so little yet adds so much to the strength and value of the structure.

WRITE TODAY for your copy of WAL-LOK's new folder showing sizes, specifications and test results.

WAL-LOK
ADRIAN PEERLESS, INC.
1481 E. Michigan St.
Adrian, Michigan

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automatic weighing and measuring devices, coupled with the operation of slump and moisture determinants and other effective plant controls, can be most helpful in selling a prospect or new customer on the reliability of a concrete producer.

An out-of-town engineer, who was planning a large Toledo project, came to visit our dock plant. Because I knew that the plant operator would have everything in readiness and in excellent operating condition, we inspected the central mixing plant from top to bottom. The visitor was greatly impressed by the clean plant and the modern plant controls, several of which he had not previously seen in use. Purposely I did not take him to visit the dispatch office and the garage. Actually I feared that the internal condition of these two facilities would harm the favorable impression created through the plant visit.

The necessity of good housekeeping should be apparent to all urban producers as city zoning laws become more restrictive. Unless producers clean up their operations they are not going to be able to put plants in neighborhoods where they might wish to locate, or keep plants where they are now located. In some competitive metropolitan markets many people purchase concrete from distant producers because they resent the operations of nearby producers, including plant conditions, truck appearance, and drivers' road tactics.

We go back once more to the importance of producing and selling quality concrete. A quality minded producer is in better position to "cash in" on an effective merchandising program. As part of a planned program, many fair-sized producers provide for the regular checking and testing of materials and concrete.

It is dangerous practice for a concrete supplier to depend solely on the testing reports of commercial laboratories. Their employes make mistakes in sampling and testing. Too frequently these mistakes are charged against the concrete furnished by members of our industry. Careless laboratory employees tend to be more careful when they know that their work is being checked.

A number of ready-mixed concrete companies with several concrete technicians on their payrolls operate their own testing laboratories. Materials and concrete are checked and tested. Proper mix designs are prepared. There is closer control placed over weighing and mixing procedures. Company concrete is given additional protection against bad job handling and faulty testing procedures. Without a doubt, a higher quality, more uniform con-

Your Customers will say...



when you offer them a choice of
23
DIFFERENT
CEMENT & MORTAR
COLORS

Made by Williams, this is the broadest selection of fine Cement and Mortar colors on the market. By offering your customers a choice of 23 shades, you can quickly and easily settle upon one having the exact chemical and physical properties your color specification requires.

CEMENT COLORS BY WILLIAMS

Here you have a choice of 18 shades—6 Reds, 3 Greens, 3 Browns, 3 Yellows, 1 Black, 1 Blue, and 1 Orange. Each shade is manufactured to meet the most exacting specifications for cement work—as recommended by the American Concrete Institute and the Portland Cement Association.

MORTAR COLORS BY WILLIAMS

Here you have a choice of 5 different shades—one shade in double strength red, light buff, dark buff, chocolate and black. Each of these colors may be used with excellent results with any standard mortar mix or with a ready-made Bricklayer's Cement.



Write today for color samples and complete technical information on how Williams Cement and Mortar Colors give you superior results. Address Dept. 10, C. K. Williams & Co., Easton, Pennsylvania.

WILLIAMS
COLORS & PIGMENTS

C. K. WILLIAMS & CO.
East St. Louis, Ill. Easton, Pa. Emeryville, Cal.

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2 NEW GERLINGER PRODUCTS FORK LIFT TRUCKS

On-the-job testing, over a period of months, has proved these 1957 Gerlinger Fork Lift Trucks are ready to meet any and all challenges supplied by Industry's heavy-duty handling needs.

"G" SERIES
in 6 capacities
12,000 LBS. • 15,000 LBS.
16,000 LBS. • 18,000 LBS.
20,000 LBS.
22,000 LBS.

"W" SERIES
in 6 capacities
12,000 LBS. • 15,000 LBS.
16,000 LBS. • 18,000 LBS.
20,000 LBS.
22,000 LBS.



The improved profile is new in the "G" Series, but the time-proved overall design of the entire Gerlinger Fork Lift Truck line is maintained. And the famous job-proved features are here, too, including the exclusive counter-active weight distribution and full-axle pivot permitting the shortest turning radius possible on such heavy equipment. Heavy-duty 20" truck wheels use standard truck-size pneumatic tires.

The new "W" Series is Gerlinger's answer to Industry's demands for heavy-duty materials handlers with wide axle front *and* back. "Tracking wheels"... rear steer wheels aligned with front drive wheels...are particularly advantageous in minimizing the drag in areas where gumbo and other adverse ground conditions prevail. All six wheels are standard 20" wheels, using industrial truck tires.

For full information and specifications on the "G" and "W", contact your nearest Gerlinger distributor or write:

GERLINGER CARRIER COMPANY
•
DALLAS, OREGON

THESE NEW MODELS INCORPORATE THE MANY EXCLUSIVE BUILT-IN FEATURES THAT MAKE GERLINGER THE OUTSTANDING FORK LIFT TRUCK ON THE MARKET.

JOB PROVED GERLINGER PRODUCTS

G-622

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INCREASED PRODUCTION

GREATER STRENGTH

COLD-WEATHER PROTECTION

LESS BREAKAGE

INCREASED DENSITY

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GET BETTER CONCRETE PRODUCTS with SOLVAY CALCIUM CHLORIDE

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This free 18-page booklet is packed with easy-to-read data that can help you make better poured, pressed and tamped concrete products with Solvay Calcium Chloride.

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SOLVAY PROCESS DIVISION
Allied Chemical & Dye Corporation
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Please send me without obligation or cost:
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CITY _____ ZONE ___ STATE _____

CP-9

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K-3

ONLY KORPAK HAS 3-WAY PACKING

Density determines quality . . . and packing determines density. No block machine has such packing thoroughness as the Korpak. Why?

Because the cores, instead of serving only to form the voids, are put to work as active densifying agents. Under direct-connected motor power, they move back and forth 3600 times a minute, with each stroke serving to pack incoming material *laterally* against the mold box sides.

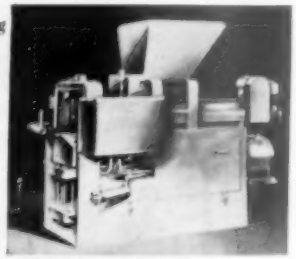
Lateral packing from around 300 square inches of packing area is augmented by the upward pressure, with the amount of squeeze adjusted to fit the kind of aggregate being used.

1-man operation . . . hydraulic movements . . . electrical controls. 2¼ tons of machine self-contained to occupy only 33 square feet of floor space.

Korpak machines are available on sale or lease-purchase. Write for descriptive catalog.


Core-Packing Assembly

W. E. DUNN MFG. CO.
544 W. 24th St.,
Holland, Mich.
996 Dundas Highway,
Cooksville, Ont.



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CONCRETE BURIAL VAULTS

AMERICA'S FINEST MOLDS AND LOWERING DEVICES

TERRITORY FRANCHISES

BERG VAULT SYSTEM

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EQUIPMENT DIVISION
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K & R

AIR POWERED CUTTERS
SPEED UP PRODUCTION



Reduce cutting costs 50%.
Cut Pipe Mesh, Reinforcement Bars, Rods & Bolts.
High Speed, Light Weight, Portable.
5/16" to 9/16" Head Capacity.
Price range $140. to $200.

Write for literature.

K&R AIR POWERED EQUIPMENT CO.
CANTON, SOUTH DAKOTA

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crete is processed and delivered under company laboratory control. At our operations, as previously mentioned, we employ the services of a testing laboratory on a yearly retainer basis. This arrangement has worked out most satisfactorily. The head of the laboratory, Dr. Herbert F. Kriege, is an outstanding concrete technician. Unquestionably, his own great interest in all the many quality problems of a ready mixed producer has contributed greatly to the improvement of our concrete. Associates of Dr. Kriege maintain close controls over aggregates, see that all our mixes are properly designed, check processing procedures, and regularly make strength, slump, and air tests on concrete delivered to jobs.

We think that our testing laboratory arrangement gives us most of the essentials that a company-operated laboratory would provide. We believe there is one great advantage in our arrangement. The testing report of an independent, accredited testing laboratory carries an authority that a company laboratory can never approach. Some producers have made arrangements with laboratories that have proved dismal failures. There simply hasn't been sufficient continuing interest on the part of the laboratory. Under most conditions, the company operated laboratory, if one can afford it, is probably more dependable. When one can find a man like Dr. Kriege, I'll take the independent laboratory arrangement.

The efficient producer who employs competent personnel, produces quality concrete, makes on-time deliveries, and enjoys the good will of his community already has a most effective merchandising program.

Promotes Concrete Block

THE CONCRETE MASONRY ASSOCIATION is going to concentrate more on the promotion of concrete block uses, although continuing its research and testing program in 1956, according to Pete Muth, president. Jay Lyon, sales manager, General Concrete Products Co., Van Nuys, Calif., is chairman of the public relations committee, which will prepare the promotion program.

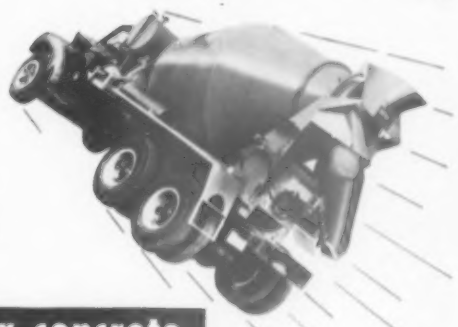
Concrete Window Frames

IN A FAIRLY LARGE HOUSING PROJECT in Germany, a precast concrete window frame has demonstrated effective savings over orthodox frames. The elimination of several different types of labor has been found helpful in reducing costs, according to Dr. Fuesecke (*Betonstein Zeitung* Vol. 22, No. 3, 1956).

No — the New ROCKET will NOT fly to the moon

25th Anniversary

That's right.
And for the sake of honesty in advertising, there are other things the Rocket will not do. It will not operate satisfactorily under water; it will not quadruple your profits within 24 hours; the Rocket's rate of charge will not exceed the speed of sound. The new Rocket will not compete in the 1957 Olympics as a member of the interplanatory space squadron.



But it WILL mix concrete

It will mix it quickly and properly under the most adverse conditions. It will also agitate quite successfully.

Owners (of Rockets) tell us this mixer (1) requires surprisingly little maintenance, (2) has every ease-of-operation feature (at no extra cost).

We honestly believe you'll agree that the Rocket is a fine mixer at a reasonable price that will give you better-than-average performance for a long, long time. *There's a Rocket to fit every Pocket(book), too.*

Demand the Badge of Dependability



ALL THESE FEATURES at NO EXTRA COST!

Hydraulic Chute Control is fully automatic. Controls grouped for easy access.

Aluminum Extension Chute attaches to 36" fold-over addition to main chute. Total discharge chute: 12' 6".

Electric Revolution Counter kit included, you can handle most specifications with the Rocket!

Special Alloy, abrasion resisting steel used at all wear points.

Unobstructed Hopper, for rapid charging, no spilling or waste.

Positive Chain Drive, flexible power, not affected by truck twist, road shock.

Standard Industrial Engine, truck-type transmission. Repair parts readily available.

Three-Point Suspension, one-piece cast steel precision machined ring.

CONCRETE TRANSPORT MIXER CO.

4007 FYLER AVE., ST. LOUIS 9, MO.
FLanders 2-7800

MAIL THIS COUPON TODAY!

Gentlemen: Please rush full information, prices and terms on the following

- ☐ New Rocket Revolving Drum Truck Mixer
- ☐ Hi-Lo Stationary Drum Mixer
- ☐ Batching Equipment ☐ Water Meters
- ☐ Material Handling Equipment

CP

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79 W. Monroe St.
Chicago 3, Ill.



A scene at the picnic. In the group may be seen Al Streblow, foreground, and facing the camera are Mrs. H. Baade, E. A. Peterson, Mrs. Al Streblow, Mrs. Geo. W. Katterjohn, and Mrs. M. E. Rinker. Leon Camp and Geo. W. Katterjohn are in the background



Earl W. Peterson, president of N.C.M.A., with **Mrs. Peterson** on boat trip

N.C.M.A. Directors' Meeting

DIRECTORS of the National Concrete Masonry Association met at the Empress Hotel, Victoria, B. C., on July 9 to 12. Most of the members from the East arrived in a special railroad car to Seattle, Wash., and then to Victoria by ferry. Current problems of the industry and the association program were discussed.

Preceding the meeting on July 7, the directors and their families were guests on a boat trip and a picnic ashore which was sponsored jointly by N.C.M.A. members in the northwest and the Concrete Products Association of Washington. The boat trip included a tour of part of the Seattle harbor and scenic areas of Puget Sound. A total of 104 were aboard the boat.

Loomis Gets Chrysler Contract

J. P. LOOMIS CONCRETE AND SUPPLY CO., Akron, Ohio, has been awarded the contract to supply more than 80,000-cu. yd. of concrete for the Chrysler Corp. stamping plant at Twinsburg, Ohio.

EFFICIENT SIDE-LOADING with the

Hydra-Lift Unloader

(Patent 2,751,095—other patents pending)



or HYDRA-LIFT itself will do speedy job of loading truck. Loads two cubes at one time.

Many HYDRA-LIFT users have lift trucks prepare loads after delivery trucks leave. As trucks return, their HYDRA-LIFT units quickly reload them.

This eliminates costly loading delays which often occur when several trucks return at the same time.

UNLOAD TWO CUBES AT A TIME • UNLOAD INTO BASEMENTS • UNLOAD WITH EASE ON HILLS

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HAVERSTICK BROS.
211 Stone Mill Road
Lancaster, Pennsylvania
Phone 2-5722

DEALER INQUIRIES INVITED

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Cancer and healthy cells seem to feed on different kinds of "food." We know how to make some cancer cells die by starving them. Will we starve out all kinds of cancer cells one day? Only more work and research will tell.



Some cancer patients develop substances that fight their own tumors. When science knows more about antibodies, we may have a new cancer treatment. Only more work and research will tell.



Some cancers are being halted by atomic materials. Can new radioactive isotopes affect other cancers in the same way? Only more work and research will tell.



New drugs are being developed that fight specific kinds of cancer. Will any of them turn out to be cancer-killers? Only more work and research will tell.

Some good news about cancer

. . . and how you can make the news better

These photographs illustrate some of the work our scientists are doing in the fight against cancer. Just one thing is needed to keep this research going. Your help. If you—and all of us—give today, the research will go on until we conquer our greatest enemy—cancer. Help fight cancer with your check. Give generously Send your contribution to CANCER, c/o your town's Postmaster. AMERICAN CANCER SOCIETY.

Being First To Try Is ROUTINE-
But Being First To Succeed Is NEWS.

See October Issue of ROCK PRODUCTS for details.

ANNOUNCING

Two (2) New Models MIX-MIZER . . . A new deluxe model—a new super model

For the operator demanding the finest in automatic control

These New MIX-MIZERS:

Control pre-wetting of lightweight aggregates automatically
Control final moisture content
Most important—Control total mixing time

Write for Free Trial Offer at your plant on your materials

W. H. LACKEY, Inc.
Block Plant and Industrial Equipment
Telephone Circle 6-8926 • P. O. Box 25 • Kingsport, Tennessee

"WE ARE SPECIALISTS IN YOUR BUSINESS"

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SMITHKO CEMENT COLORS

- **The Standard of Comparison for Nearly Forty Years**
- **65 Shades to Choose From Including Many New Colors**

Send For Latest **COLOR CARD**, Samples, Technical Brochure, and Quotations.

SMITH CHEMICAL & COLOR CO.
53-57 John St., Brooklyn 1, N.Y.

SWAP — SELL — BUY
BLOCK MACHINES

Stearns #7 & 9 Jolterete	$500.00 each
(Jolterete owners at this price buy one for spare parts.)	
Mold Boxes #7 & 9	150.00 each
2—Stearns Clipper Strippers	250.00 each
1—18 ft. Stearns Skip Hoist	450.00
1—George 28 cu. ft. Concrete Mixer	750.00
1—Continuous Mixer	150.00
2—Air Offbearers Stearns #7 & 9	250.00 each
2—Hand Lift Trucks	175.00 each
100—Racks for cored steel pallets	10.00 each

100,000 pressed steel pallets in stock (Send tracing or sample for quotation).

WRITE • WIRE • PHONE
Mr. McCaughey

Send in list of equipment you need. If we don't have it in stock, we usually know where we can find it at a bargain.

GENERAL ENGINES CO., INC.
Route 130 Thorofare, N. J.
Phone: Tilden 5-5400

LOWER COST
packer-head wings
Proved to last as long or longer — yet cost considerably less. Write for prices.

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LUFKIN, TEXAS

VIBRO-TABLES & METAL MOLDS



SPLASH-BLOCKS — LAWN TRIM
WINDOW-WELLS — DIST. BOXES
STEPPING-STONES — WALL CAP
CHIMNEY CAPS — STEP TREADS
HIGHWAY DIVIDERS
"BAR-X" BARBECUE & INCINERATORS
SPECIAL MOLDS MADE TO ORDER.

WRITE TODAY
SPILLMAN MFG. CO.
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GOOD WILL BUILDERS

Your contractor and bricklayer customers will be able to do quicker, easier, straighter work with UB Tools . . . tools that carry YOUR OWN COMPANY ADVERTISING. Linestretchers, Corner Ties, Line Pins, Twigs, Concrete Calculators. We also wholesale a complete line of Blocklayers' Tools. Write for literature and prices.

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HIGH PROFIT LOW COST



Easy Stripping Metal Molds

Send for Free Bulletin

PARK MOLD & STEP CO.
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Pallets
Racks
Lift Trucks
Block Machinery

WITTEMANN MACHINERY COMPANY
FARMINGDALE, NEW JERSEY
Specialists in Concrete Products Equipment
Eastern Representatives of the
COLUMBIA MACHINE WORKS, Vancouver, Washington

Elevators
Bins
Conveyors
Feeders
Mixers

SALESMAN—SIDE-LINE

Now calling on concrete pipe and block plants. Short, profitable line. Protected territory. Leading manufacturer expanding sales territory in Mid-West and East. Write in confidence as our salesmen know of this ad. Address Sales Manager Box 9152. San Antonio, Texas.

unbreakable
PALLET RINGS
Write for full information
TEXAS FOUNDRIES
LUFKIN, TEXAS

Try A Small Ad For Quick Results

ALSO SEE WHERE TO BUY ADVERTISING ON OTHER EQUIPMENT IN ROCK PRODUCTS' GENERAL SECTION

PRICED FOR QUICK SALE

As we have installed larger Stearns equipment, we have the following good used equipment for immediate sale:

1—Stearns Zipper (semiautomatic), serial No. Z-49.
1—Stearns 18 cu. ft. mixer, with V-belt drive.
1—Pallet oiler.
44—Racks.
1—4" ATTACHMENT.
950—4" cored steel pallets, Code ZONAL.
1,120—4" steel plate pallets (for 4" solids).
1—8" ATTACHMENT.
1,325—8" regular, cored steel pallets, Code DRAM.
150—8" double corner, cored steel pallets, Code DRESS.
100—8" regular sash, cored steel pallets, Code DROSS.
100—8" single bull nose, cored steel pallets, Code LADLE.
100—8" single bull nose sash, cored steel pallets, Code LYCON.
100—8" double bull nose sash, cored steel pallets, Code LOBBY.
1—10" ATTACHMENT.
540—10" regular, cored steel pallets, Code FUNGUS.
80—10" double corner, cored steel pallets, Code FORTRESS.

BYRUM BLOCK COMPANY
2230 Hill St., Anderson, Indiana

FOR SALE

1—L-2 Lith-I-Block machine with 6" attachment.
1—30 Cu. Ft. Gatzke Mixer complete with 20 H.P. Motor.
1—30 Cu. Ft. Lith-I-Skip—Inclined Type
1—15 H.P. Quincy Air Compressor
1—Automatic Side Pallet Return
40-72-Block Steel Racks
1440—¼" x 18" x 22" Steel Pallets
2—Mold Box Shells

This equipment being replaced by H-310 3-block hydraulic Lith-I-Block Machine. May be seen in daily operation at Kirchner Manufacturing Co., 9921 St. Charles Rd., St. Anns, Missouri. Or contact:

LITH-I-BAR COMPANY
Holland, Michigan
Financing can be arranged.

FOR SALE

OWNER RETIRING
EXCEPTIONALLY GOOD BUY

SEPTIC TANK, VAULT BUSINESS and SMALL BLOCK PLANT

16 years in a well established and reputable year around business. In one of the fastest growing cities in the southwest.

BOX O-61, CONCRETE PRODUCTS
79 W. Monroe St. Chicago 3, Ill.

FOR SALE

Concrete Products plant and Building Contracting business. Metal working shop, air conditioned office, on paved main street. PLUS Three bedroom, 1½ bath home in desirable residential area. County seat town in Northwest Arkansas. Price: $25,000.00, $10,000.00 down, balance can be financed at 4½%. You must see this.

WRITE ACME INDUSTRIES
Bentonville, Ark.

FOR SALE

1 Besser Skip Hoist. Very Good Condition.
1 Norwalk 500-Gal. Septic Tank Mold.
1 Stillman 500-Gal. Septic Tank Mold.

East Gary Concrete Products Co.
2599 DeKalb St. East Gary, Ind.
Phone: East Gary 2-1592

KEEP ABREAST
WITH
INDUSTRY TRENDS
THROUGH
ROCK PRODUCTS

PRICED FOR QUICK SALE

As we have purchased a Stearns ELECTROMATIC, we have the following good used equipment for immediate sale:

1—Stearns Model 50 automatic plain pallet block machine.
1—Right-hand pallet return complete with magnetic off-bearer.
1—28 cu. ft. Stearns mixer complete with 20 HP motor and starter.
1—Stearns 28 cu. ft. skip loader.
1—8" attachment.
1—6" attachment.
1—4" attachment and conversion parts for solids.
1—Set of conversion parts to make 4" solids and 4" joist units 14" long.
1—Brick attachment to make 28 solid regular brick.
1—Brick attachment to make 12 double size brick.
2,160—Plain steel pallets 5/16" x 18½" x 18½".
60—Steel racks, 72 block capacity.

The above equipment is in good condition and may be seen in operation.

Radel Concrete Products, Inc.
4308 Delhi Pike, Cincinnati 38, Ohio
WAbash 1-6406

GERSON'S GOOD WILL BUILDERS

Advertising necessities for the block industry. Line Pins, Twigs, Corner Blocks, Calculators. Complete catalog on request.

GERSON CO. 82 Deering Rd.
MATTAPAN 26, MASS.

CONCRETE BRICK COLORS
CEMENT COLORS
MORTAR COLORS

made by

BLUE RIDGE TALC CO., INC.
Henry, Virginia

FOR SALE

#9 JOLT CRETE—3 AT A TIME

4000 8" Equiv. A DAY Excellent condition. 8" & 12" attachments with approx. 4800 8" & 2700 12" pallets. Approx. 100 Chase block cars, transfer cars, rail and turntable. Many spare parts for machine included. ALSO a complete drag line with 75 H.P. motor.

NASSAU CONCRETE PRODUCTS CO., INC.
P. O. Box 6 No. Baldwin, L.I., N.Y.

FOR SALE

Fleming 180 Block Machine, with 8", 6", 4" patio mold boxes.
All for $1150.00

LEMAY CONCRETE BLOCK CO.
7900 Reilly Ave. St. Louis 11, Mo.
Flanders 1-9940

PLAIN PALLETS CLEANED

IN YOUR PLANT

PALLET SERVICE CO.
R. 2—Phone 3-3271—Oxford, Ohio
We use Besser Equipment

WANTED

SUPERINTENDENT FOR CONCRETE PIPE PLANT NEAR NEW YORK CITY. GIVE FULL INFORMATION ON EXPERIENCE AND SALARY.

BOX O-63, CONCRETE PRODUCTS
79 W. Monroe St., Chicago 3, Ill.

WANTED

MULTIPLEX VENTED
16 x 16 and 16 x 20
Chimney block pallets

Vertes & Sons Lbr. & Coal Co.
Taylor Center, Michigan

Forced to sell on account of health, our Concrete Products plant located in good farming community. Have excellent school and three churches.

Will sell as is now, ready to operate, or equipment and building separate. Building 50 x 100 located on M.C.R.R.

Equipment includes the following: 40' bucket sand elevator, 65 yard 3 compartment steel aggregate bin. New Monarch heavy duty stave machine, with anchor tamper. 400 steel covered stave pallets, 16 stave racks, Truck-man lift truck, collapsible steel silo staging adjustable for 10 to 16' silos, Howe electric stave hoist 30 H.P. low pressure boiler with stoker and water control, No. 12 multiplex mixer with 5 horse motor, several air cylinders sizes 2 to 8" diameter and some air valves 1 each, 4-8 and 12" mold boxes for Lith-I-Bar 3 block machine ½ ton star electric hoist on monorail, 1 chain rachet hoist Burg surfacing machine, 6" skill saw, table saw and many other small tools.

GALIEN CONCRETE TILE CO.
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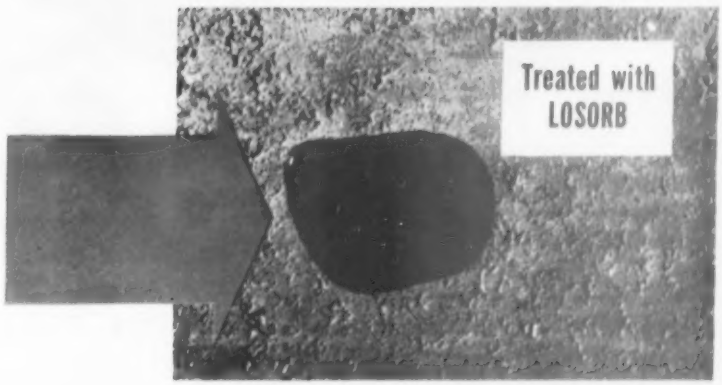
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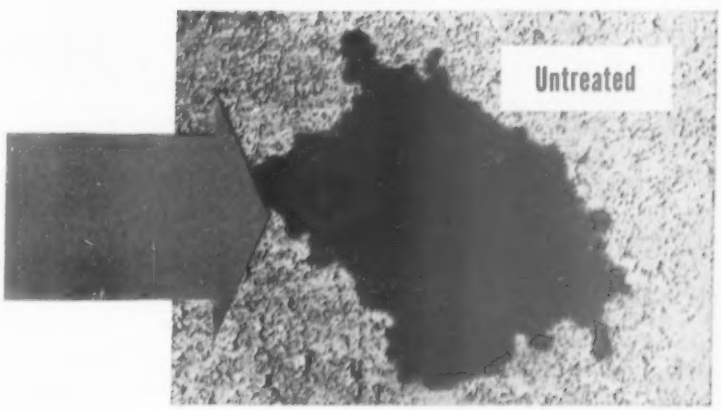
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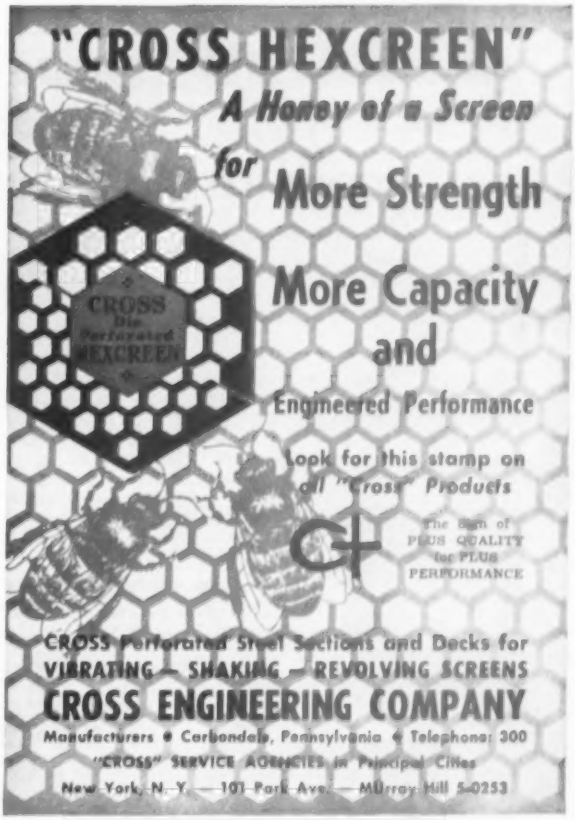
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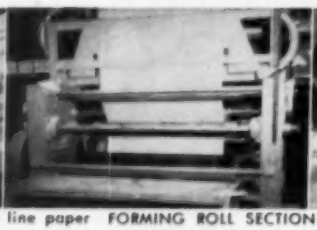
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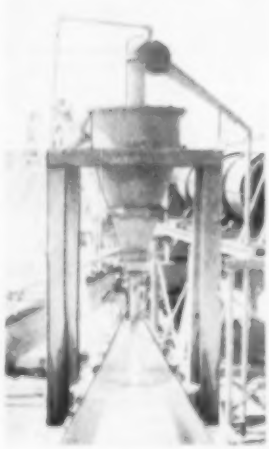
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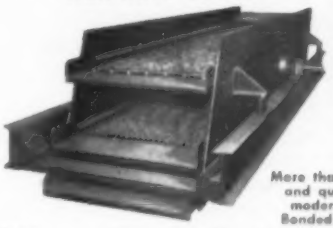
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236AS	3' x 6'	2	688
336AS	3' x 6'	3	956
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338AS	3' x 8'	3	996

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16"	90'	3712	1900
18"	25'	1477	794
18"	45'	2217	1166
18"	70'	3142	1648
18"	85'	3697	1933
18"	100'	4252	2220
20"	25'	1517	828
20"	60'	2882	1533
20"	75'	3467	1838
24"	25'	1590	898
24"	45'	2430	1330
24"	70'	3480	1875
24"	100'	4740	2514
24"	120'	5580	2950
24"	150'	6840	3603
30"	50'	2911	1617
30"	70'	3871	2119
36"	25'	1818	1118
36"	45'	2858	1678
36"	60'	3638	2096

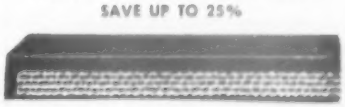
For conveyors longer or shorter than those listed above, add or deduct the following per foot prices according to belt width. Prices include belting.

For 14" belt	$16.84 per foot
For 16" belt	18.04 per foot
For 18" belt	19.24 per foot
For 20" belt	20.37 per foot
For 24" belt	21.78 per foot
For 30" belt	24.75 per foot
For 36" belt	27.95 per foot

Write For Bulletin #1138

NEW CONVEYOR BELTING

SAVE UP TO 25%

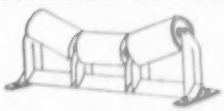


A high grade of heavy duty 4 and 5-ply, 28 oz. duck, ⅛" top rubber cover x 1/32" bottom rubber cover belt.

Width	Ply		List Price	Sale Price
14"	4	12-15#	$3.43 foot	$2.75 foot
16"	4	AFP	3.86 foot	2.88 foot
18"	4		4.27 foot	3.19 foot
20"	4	800-1000#	4.69 foot	3.69 foot
24"	4	ACT	5.55 foot	4.14 foot
30"	4		6.77 foot	5.06 foot
36"	4		8.01 foot	6.00 foot
16"	4	16-19# AFP	4.59 foot	3.36 foot
18"	4	2500-3000#	5.09 foot	3.72 foot
20"	4	ACT OR	5.57 foot	4.24 foot
24"	4	24-33#	6.56 foot	4.80 foot
30"	4	AFP with	8.05 foot	5.89 foot
24"	5	1800-2200# ACT	7.68 foot	5.61 foot

Additional widths and plies available at low prices. Write for Free Sample.

NEW IDLERS AND RETURN ROLLS 25% BELOW LIST PRICE



3-roll, 5" diameter Troughing Idlers for:

14" belt	$18.50	24" belt	$21.25
16" belt	19.25	30" belt	22.00
18" belt	20.50	36" belt	22.75
20" belt	20.75	48" belt	25.50

1-roll, 5" diameter Return Idlers for:

14" belt	$7.25	24" belt	$ 8.50
16" belt	7.50	30" belt	9.50
18" belt	8.00	36" belt	10.00
20" belt	8.25	48" belt	11.50

All steel. Interchangeable with other well-known makes. Furnished with easily replaceable pre-lubricated Sealed ball bearings. Also can be furnished with greasable type Alemite Fitted bearings at slight additional cost. Maintenance is negligible.

WRITE FOR FREE CATALOG AND PRICES

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Mfrs. of Scales, Conveyors, Conveyor Parts, Idlers, Vibrating Screens, Crushers and Feeders
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Cedarapids 3240 5A primary unit.
Cedarapids 6A 2540 primary unit on rubber.
Cedarapids 4032 hammermill secondary unit. Rebuilt.
Cedarapids 1636—3416 Junior Tandem on rubber. Rebuilt.
Cedarapids 3032 hammermill. Rebuilt.
Cedarapids 4033 hammermill. Rebuilt.
Cedarapids 2033 hammermill. Excellent.
Williams 30" pulverizer.
McLanahan 12" x 20" log washer with V-belt drive.
12" x 35' inclined open elevator. New.
Heltzel 40' x 12" 75 ton per hour enclosed elevator.
27½ ton single compartment 8'x12' bin.
60-ton, 2-comp., 8' x 18' storage bin w/clam gates.
100-ton, 2 comp., 12'x23' bins.
Special bins to your specifications.
Conveyors—18"-24"-30"-36". Also belting.
18" dia. x 20" face magnetic pulley.

SHOVELS AND CRANES

Lorain L-820, 2 yard diesel shovel-crane-drag. Reconditioned.
Lorain L-50-K backhoe Cat diesel. New condition.
Koehring 304 diesel shovel-hoe. Reconditioned.
Lima 34 Paymaster ¾ yard diesel shovel. Good condition.
Lorain Byers 83 diesel powered hoe.
Lorain Byers 83 gas powered crane.
Lorain TL-20 4x4 self-propelled crane. Excellent.
Lorain TL-20 6x6 Moto-Crane. Reconditioned.

TRACTORS, TRUCKS, SCRAPERS, ETC.

3—Euclid Rear Dumps, 15-ton, quarry bodies. Good condition.
1—Euclid 18-yard Twin Engine Scraper. Very good condition.
2—Euclid 13-yard bottom dumps, Cummins Diesel.
6—Euclid 13-yard bottom dumps, Buda Diesel.
2—Euclid Tractors with 3200 gallon water tank, Semi-trailer.
2—Euclid Model 3BV Loaders.
3—Caterpillar DW-10 Scrapers. Reconditioned.
2—Caterpillar DW-15 Scrapers. Excellent.
1—Wooldridge 15-18 yard, Model TCR Scrapers. Rebuilt.
Cat D8 with winch.
1—Allis-Chalmers HD19 with Carco Blade. Excellent condition.
International TD24A with B-E angledozer.
1—Allis-Chalmers HD10 with Baker Bulldozer Blade.
1—International TD18 with Bucyrus-Erie Bulldozer Blade. Excellent condition.
1—International TD9 with front shovel attachment.

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Caterpillar D7700, 63 H.P. @ 1000 RPM. Rebuilt.
Caterpillar D13000 6-cyl. diesel engine. Twin Disc clutch, extended shaft, outboard bearing, 145 H.P. @ 1000 RPM. Rebuilt.
Caterpillar D17000 8-cyl. diesel complete with radiator and clutch.

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Barber-Greene model with drier, graduation unit, etc.

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600 cu. ft. Gardner-Denver diesel, practically new.
500 cu. ft. Gardner-Denver diesel, rebuilt.
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CAMP HILL, PA.
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625 Page Dragline, 170', 8 yd.
200-W Bucyrus Monighan Drag, 140', 6 yd.
621 Page Dragline, 135', 5 yd.
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1055 P&H Dragline, 100', 3 yd.
54-B Bucyrus Erie Drag, 90', 2½ yd.
1201 Lima Dragline, 85', 3 yd.
3500 Manitowoc Drag, 80', 2½ yd.
1001 Lima Drag, 80', 2½ yd.
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170-B Bucyrus Erie Elec. 6½ yd. Shovel
1600 P&H Elec. 6 yd. Shovel
2400 Lima 6 yd. Diesel Shovel
120-B Bucyrus Erie Elec. 5 yd. Shovel
1055 P&H 4½ yd. Shovel
111-M Marion 4 yd. Shovel
1201 Lima Standard 3½ yd. Shovel
803 Lima 2½ yd. Shovel
80-D Northwest 2½ yd. Shovel
54-B Bucyrus Erie 2½ yd. Shovel
38-B Bucyrus Erie 1½ yd. Shovel
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22-B Bucyrus Erie ¾ yd. Shovel
802 Lima Cranes
58-BH Joy Champion Rotary Air Drills
600 Reich Heavy Truck Mounted Rotary Air Drill
Failing Rotary Drill
Quarrymaster Drill—with 2-500 cu. ft. Compressors

Also, 42-T, 29-T and 27-T Well Drills

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BELT CONVEYORS: One 60" x 170 ft., one 60" x 300 ft., complete with all mechanical parts, belt and supporting structures.

DRILL: Quarry Master Drill with two diesel compressors, 40 ft. mast. New condition.

CAR DUMP: Link Belt revolving car dump, rotary type, 100 tons capacity, 62 ft. transfer table.

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FEEDER: Robins heavy duty, manganese steel, Ore Rock Feeder, 60" x 14 ft., with 20 H.P. motor, reducer, etc. New condition.

PAN CONVEYOR: 48" x 110 ft. complete with motor, reducer, etc., heavy duty type, designed for rock.

JAW CRUSHERS: 10" x 20", 15" x 36", 18" x 30", 24" x 36", 30" x 42", 42" x 40", with or without motors.

SHOVELS & DRAGLINES: Monighan Walker electric Dragline, 210' boom with 8 yd., 12 yd. and 13 yd. buckets. Bucyrus Erie Monighan 200W diesel powered dragline, new 1951. One 3 yd. and one 6 yd. capacity Electric Shovels, 2300/4000 volts. Bucyrus Erie 52-B, 2¼ yd. combination, as a shovel or as a dragline. Marion 5 yd. electric, as a shovel or dragline or both, new 1951.

OVERHEAD ELECTRIC TRAVELING CRANES: 5 to 50 ton capacity, 20 ft. to 80 ft. span.

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2—New 6½' x 150' Kilns
1—6 Williams Jumbo hammermill.
1—28" Telsmith Intercone Crusher.
2—#330 & #436 Allis-Chalmers hydrocone crushers.

KILNS

1—4½' x 40' — 10½' x 100'.

DRYERS

1—4½' x 30', 7' x 60', 8' x 120'.

CRUSHERS

1—48" x 42", 24" x 36", 18" x 36", 15" x 30", 12" x 24" Jaw Crushers.
2—42" x 16" Allis-Chalmers Crushing Rolls, rebuilt. 36" x 16 rebuilt Sturtevant rolls.
2—24" x 14" Rogers Iron Works Crushing Rolls, Rebuilt.
1—24" x 12" Farrell Bacon Crushing Rolls.
1—6", 10", 16", 20" McCully Superior Gyratory Crushers.
No. 3 up to No. 12 Gyratory Crushers.

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1—6'x12', 5½'x10' Ball Mills.
1—5½'x10' Rod Mills.
2—5½'x20', 5'x22' & 6'x22' Tube Mills.

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1—14' & 16' Air Separators.
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Bucyrus Erie 110 B, all electric, 4½ yd. shovel. New 1955. In tip top condition. Located in Colorado, 100 miles S. W. of Denver. Price, Loader $140,000

1955, P & H, combination shovel and dragline, serial #14178, new 1951, equipped with shovel attachment and 120' dragline boom, fairleads and lagging. No dragline bucket, caterpillar engine. Shows little wear and is in good operating condition. Price, F.O.B., Los Angeles ..... $55,000.

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Northwest 80 diesel shovel, new in 1948. In good operating condition here in Los Angeles. Price ..... $26,500.

Osgood model 800, 1½ yd. shovel. Serial #3205, powered by caterpillar D. 13,000 engine. Has not been overhauled but in good operating condition. Price, F.O.B., Ore Grande, California ..... $11,500.

1½ yd. dragline attachment for the above Osgood shovel ..... $2,500.

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50' c/c 8x5 buckets, complete.
32' c/c 6x4 buckets on 7" belt.
26' c/c 8x6 buckets, steel case.

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4'x8' Kennedy Type M Ball Mill.
8'x48" Hardinge, Conical Mill.
8'x36' Hardinge, Conical Mill.
9'6"x12' Marcy Rod Mill.
5'x10' Allis Chalmers Tube Mill.
8'x10' Patterson Ball, Buhrstone.
24"x20" Jeffrey Hammer Style B, NEW.
20"x12" Jeffrey Hammer Style A, NEW.
15"x8" Jeffrey Hammer Style B, NEW.
5½' Symons Short Head Cone Crusher.
36"x48" Traylor "R" Jaw Crusher.

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5'x20'x⅛" welded.
5' x 10-Hearth Furnace.
4'x40' Rotary Dryer, oil fired.
502-20 Link-Belt Roto Louvre.
705-20 Link-Belt Roto Louvre, SS.

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Tyler 5 x 12, 3 x 10, Wet type.
Robinson Gyro Sifter 28A.
Gayco 5' & 18", all with motordrives.

MISCELLANEOUS

625 CFM Worth. Compressor 14x13.
686 CFM G.D. Compressor 8½-7x6.
150 HP Union W.T. Boilers.
47' Screw Conveyor 12", 2 HP motor.

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Murray Hill 7-5280

(Machinery & Equipment Merchants)

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1—8' x 125', ¾" shell.
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1—7'6" x 7' x 125', ½" shell.
2—6' x 74', ⅝" shell.
2—7'5"x20', 5'2"x20' Link Belt, Rote-Louvre.
1—6' x 40', ⅝" shell.
1—6' x 60', 5/16" shell.
1—4'6" x 50', ⅜" shell.

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2—Allis Chalmers 10" Superior McCully.
1—Allis Chalmers k-9 Gates Gyratory.
10—Jaw Crushers 5"x6" to 42"x48".
2—Pennsylvania #5XR-100, 100 TPH.
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3—Patterson 6'x8' Ball Mills.
1—Raymond #53 Imp. Mill.
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7—NEW Jeffrey Hammermills 24"x20", 20"x 12", 8" x 15".

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3—Tyler Hummer Screens 4'x7', 4'x8', 3'x10', single and double deck.
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5—Rotex 40"x84", 40"x120".
1—Air Separator 4'.

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2—Chicago 14"x7" Compressors, 434 stm.
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12—Bucket Elevators 20' to 75' centers.
250 ft. Link Belt 12" Troughing Conveyor.
1—10,500 gpm Centrifugal Pump 135' head.

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(I can sell your surplus equipment)

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60"x48" to 6"x3"

New and used RELIABLE

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8 & 20 ton 36" & std ga. Diesel **LOCOMOTIVES**
10" portable Suction **DREDGE**
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CRUSHERS: 4x6, 8x10, 1016, 1020, 1030, 1524, 1836, 2036, 2436, 2450, 3042, 4042, 4836, 4866 **JAW**, 8K, 9K Gates, 10, 16, 30", 36" McCully, Traylor 2'4", Kennedy 18, 38½ **GYR**, 1616, 1824, 2416, 3018, 4022 **DBL ROLL**, 2', 3' **CONE**
Aggregate handling equip w/1680' 24" conveyor, BG18" x 30, 30" x 44, 24" x 45, & 24" x 60'.
2 Link Belt 3x8' Vib & 48" Revolving **SCREENS**
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MILLS: 4½x16", 6x22", 7x22", 8x30", 7x48" Ball, 9052, 4033 CR, Amer AC84, Univ 2 & 3 Hammer
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Acme Road Mach. Jaw Crusher 10x18
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CRUSHING EQUIPMENT FOR SALE

1—Cedar Rapids portable Primary Crusher 25 x 40 powered by Murphy Diesel
1—Cedar Rapids Master Tandem portable 10 x 36 Jaw, 40 x 20 Roll Crusher powered by Murphy Diesel
1—Cedar Rapids portable Conveyor 75' x 30"
1—Conveyor 40' x 30"
1—Conveyor 60' x 28"
1—Conveyor 50' x 28"
1—Conveyor 20' x 24"
2—Double compartment Cedar Rapids Bin
1—Single compartment Cedar Rapids Bin
1—4 x 12 Cedar Rapids double deck Screen
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Two (2) Model 27 T Bucyrus-Erie Blast Hole Drills, Crawler mounted, Chain and Sprocket Drive, Equipped with Telescopic Derrick and Built in Tool Wrenches. Powered by International Gasoline Motors, Water Cooled, 4 Cylinders with Twin Disc Clutch. With the following accessory equipment for 6⅝" Drilling: Combination and Regular Drill Stems, Wire Rope Sockets, Drill Bits and Fishing Tools. Also one (1) Spare Jack Shaft completely installed. Will fit either unit.

One (1) #8 Bucyrus-Erie Bit Dresser Complete without Motor.

One (1) Coke Furnace with Champion Electric Blower.

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18" Allis Chalmers Superior Fine Reduction Gyratory Crusher. New 1946.
20"x36" Traylor Blake Model M.
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37½ Kennedy, 550 Volts Connected.
28½ Kennedy Belted Gyratory.
20" — 20" & 16" Allis Chal. Superior McCulley.
#9 — 7½ — 6 — 6 — 4E Allis Chalmers Gyratory.

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15 Ton Diesel 60" Boom Whirley Crane.
3—40 & 44 Ton G.E. Diesel Elec. Locomotives.
10 Ton Plymouth Diesel Locomotive.
100, 35 & 25 Ton G.E. Diesel Elec. Locomotive.
25 Ton Amer. Diesel Loco. Crane. 50' Boom.

REDUCTION MILLS

12 Rod Mills 30" x 54", 4' x 14', 5' x 10', & 6' x 13' Denver, Marcy & A.C.
46 Ball Mills: 2x4', 3x7', 4x5', 5x6', 5x10', 5x18', 6x5', 6x6', 6x10', 6x9', 7x5', 7x6', 7x7', & 8 Marcy 8x6'.
29—Hardinge Mills: 10'x48", 8'x16", 8'x36", 8'x22", 7'x36', 6'x36", 6'x22", 6'x14', 5'x36", 5'x24".

ROTARY KILNS

19—4'x28', 6'x28', 7'x110', 9'x125' & 10'6"x105'.

ROTARY DRYERS

3'x26', 4'x20', 5'x35', 4'6"x40', 10'6"x60'.

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410 CFM Ingr. Rand 90B—100HP—440V.
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Come see our huge stock of used screens, feeders, conveyors etc., including:—

4—24" belt conveyors, var. lengths
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2—Symons vibrating bar grizzlies
2—Pioneer 42" Oro feeders
1—Telsmith 36" apron feeder
3—American car pullers
1—Pioneer 40x22 roll crusher plant
1—Pioneer 9x36 jaw crusher plant
1—Pioneer 5x12 Mesabi screen
5—Telsmith screens, var. sizes
1—BG hopper car unloader
12—cranes, draglines, shovels, etc.

10030 Southwest Highway — TRACTOR & EQUIPMENT CO. — Oak Lawn, Ill.

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3 Hammermills—24"x24", Eagle Crusher Co.
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22 Cars—3 yard capacity, 36" gauge, Atlas Car and Manufacturing Company
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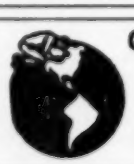
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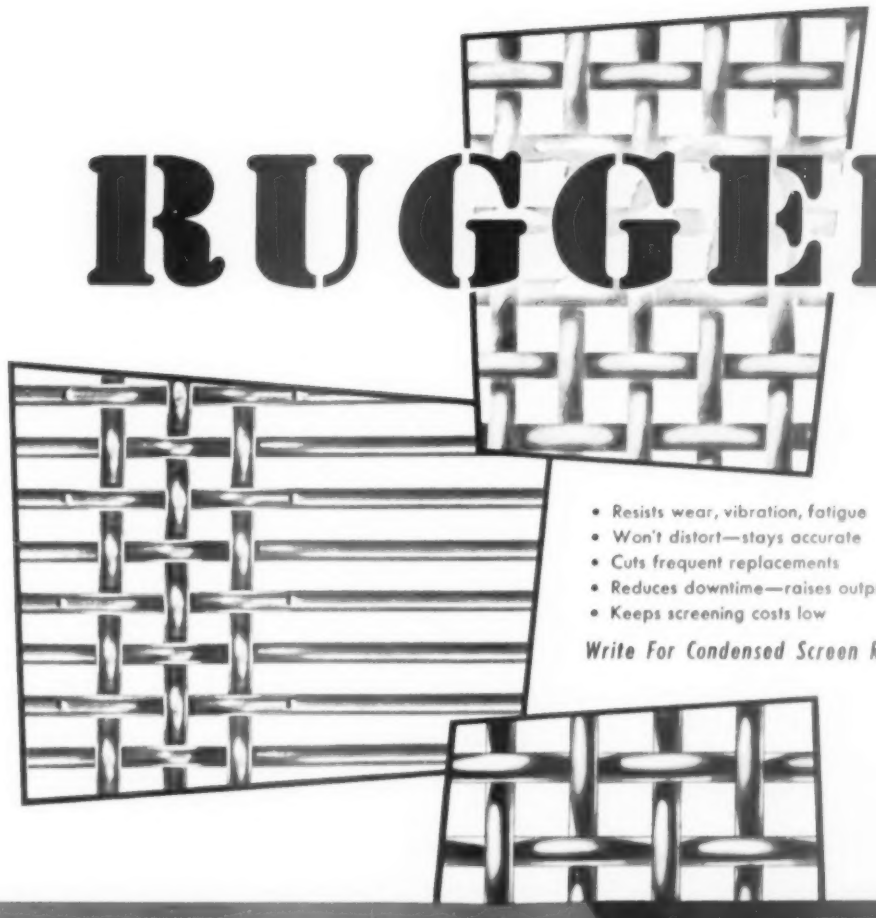
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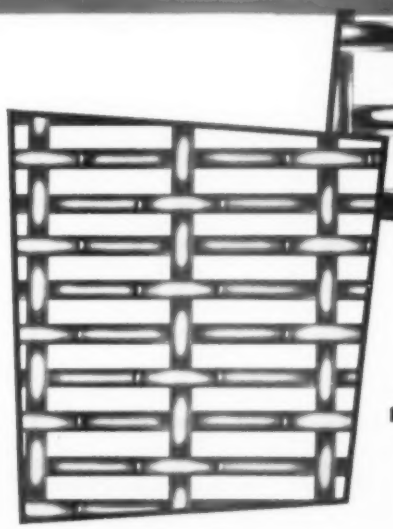


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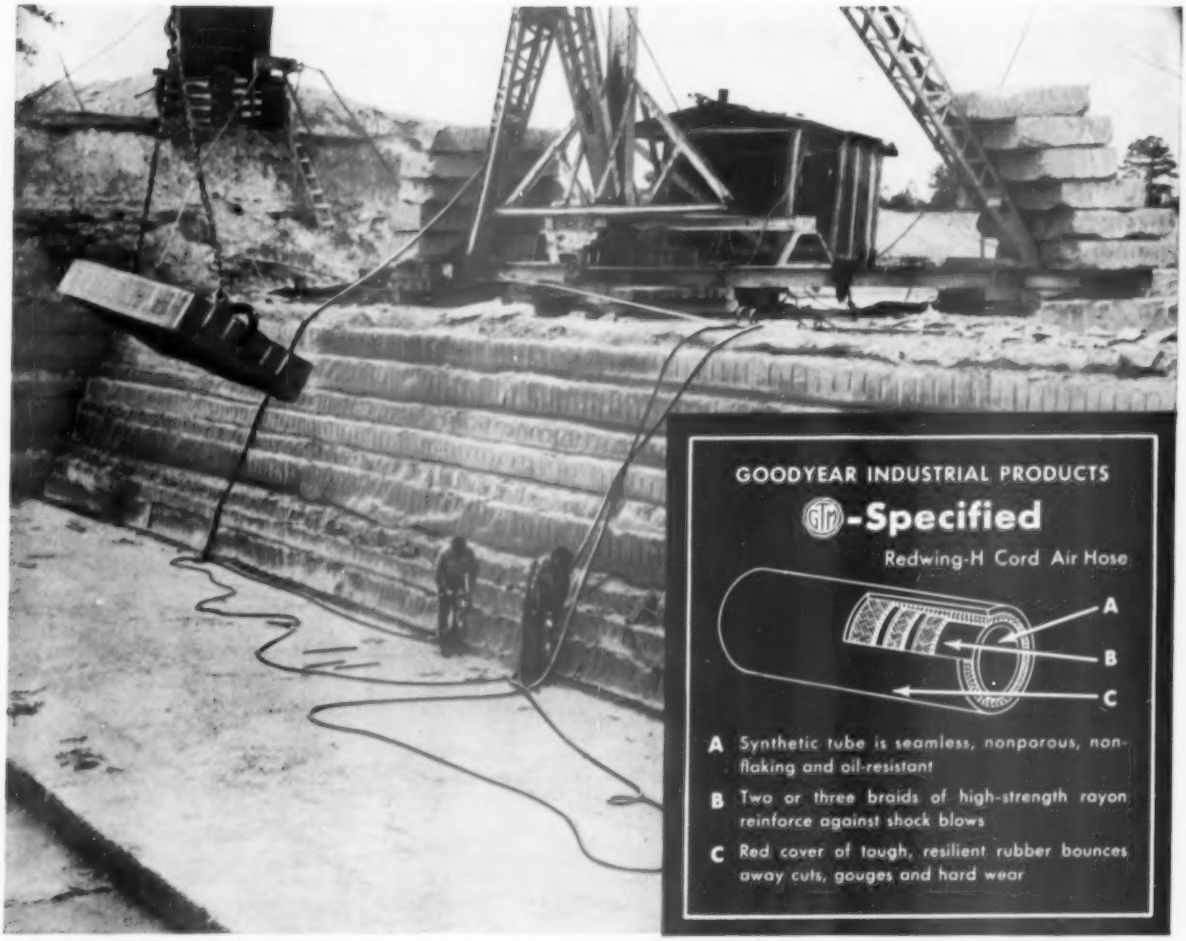
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